

## PERSONAL COLUMN

It is not just in the White House that administrative difficulties have been occurring. Messages winging their way to me in unmarked brown envelopes suggest that all is not well with the decision-making processes of some local education authority offices either. This is not just a matter of inefficiency. There is nothing new about inefficient education offices. The problem lies deeper than that and could get worse.

What might "worse" look like? Join me then in an education office of the future where terminal rot has set in. The story starts, as so often in bureaucracies, with an exchange of memoranda:

*Memo from chair of education committee to chief education officer:* What is all this about closing the youth club at Hootha from Thursday? I have not been properly consulted and we do not agree. I am away for the next few days but please see this is sorted out immediately. Signed: Brenda pp J Jones (chair)

*Memo from CEO to chair of education committee:* Unfortunately I find I too have to be away for the next few days, but I have passed your note about Hootha to my deputy to deal with appropriately.

Our CEO of the future, a student of advanced administrative techniques, then taps the following message on to his word-processor:

*CEO to deputy:* Here is a note from chair's office for you to tackle while I am away. Several points occur to me about it:

□ The provenance of the note is uncertain. Granted Brenda's unimpeachable credentials as a political adviser, there is nothing in writing from chair to suggest she has authority to sign on his behalf.

□ The decision to close Hootha was confirmed by the education committee last week. Chair chaired that meeting. By "not properly consulted" we must assume that chair did not agree with the decision in the first place or has only just realized that Hootha is in the parliamentary constituency he is nursing. These are deep waters which it is for you to plumb.

□ That "we", who are said not to agree to the closure of Hootha, are a little mysterious. My informant on the Majority Party group has kindly run through the private tape



PETER NEWSAM

## Crossed wires

'Absolute power corrupts absolutely; so too does absolute confusion'

recordings she keeps on these occasions and assures me the issue was not discussed at the last formal group meeting or even at the leader's own informal pre-group one. Is there some other group at large in the woodwork of the body politic? Or has there been a rush of royalty to chair's head? Or Brenda's?

□ I am sorry not to be here to deal with the matter myself, but the options are clear enough:

— to accede to what seems to be the drift of the request attributed to chair. Once the cost, formal impropriety and general absurdity of keeping Hootha open become apparent, we — in this case you — will be blamed for failing to ensure that the matter was, in chair's phrase, "sorted out";

— not to accede to chair's request. Its cost and absurdity will not then become apparent. Chair will, however, be confirmed in his belief that we — in this case you — are being deliberately obstructive. Nor will Brenda be pleased. As to blame, see above.

□ Neither of these options is without its difficulties, but given the heavy smoking on which you have embarked since I uncovered your plans to supplant me, a small office fire must always be a possibility. Were any such conflagration to occur, matters receiving urgent attention on your desk, such as the enclosed papers, could plausibly be ex-

pected to perish. Failing such an outcome, I must leave it to you to see this matter through.

What, you ask, is remarkable about this commonplace little exchange between professional colleagues? Hold on. The CEO continues:

□ In reminding you of the need to destroy this note, may I assure you that positively the last thing I would wish to do here as CEO is to prevent you from succeeding me? In this connection, rest assured that I have not distributed the tape of the song you articulated so clearly at the Christmas party. Yet. The views you there express on chair and Brenda might, by some, be thought amusing, but...

Let us leave the CEO's first memorandum there and move on to the second he taps out on his word processor:

*CEO to deputy:* Here is a note from chair on Hootha. Obviously, we must do as he suggests. Please see to it forthwith.

Confused instructions from the CEO? Not really. The alert reader will be able, by answering the questions that follow, to observe advanced administrative technique in action.

Why did the CEO, pen in hand, fail to sign that first memorandum before he put it in an envelope addressed to his deputy?

Why did the CEO's finger stab lightly at the word processor key labelled PR (in honour of President Reagan) and thereby

eliminate all recollection of the said memorandum?

Why did the CEO, pen still in hand, remember to initial the second memorandum and mark it "to file"?

Why did the CEO thereupon dance a jig and hum something like the tune of "So long, it's been good to know you"?

Why — and here is an easy one to end with — did the CEO not send a copy of the second memo to his deputy?

This peep into the future is becoming sordid. So let us leave the last word to Brenda, addressing chair shortly before the deputy CEO's sudden departure from the authority's service, "... and then to suggest that the CEO actually told him to start the fire. Incredible. Of course, I keyed straight into old Stoneface's (The CEO? Ed.) word processor and his instructions, for once, were clear as the day..."

But, what does cause administrative integrity to collapse? Lord Acton (in the subsequent dismay of many thousands of sixth-formers who have had to produce essays debating the point) once declared that "absolute power corrupts absolutely". So too does absolute confusion about what is supposed to be responsible for what.

That is the message contained in the brown envelopes and in the news from the White House.

### NEXT WEEK

In the highlands  
Diane Spencer reports on a drive for multicultural education in the highlands

Public versus private  
Some new research suggests privatization of nurseries results in serious lowering of standards

Back to the future  
Could the International Baccalaureate provide a model for the new sixth form?

Industrial relations  
Roger Liddle reviews the latest books on unions and the law

Extra: Computers in education

### NOTICEBOARD

#### PEOPLE...

The Home Secretary has appointed the chairman of three working groups set up to consider problems associated with young people and crime: Mr Jeffrey Greenwell, chief executive of Northumbria County Council; Miss Michaela Elliott, co-director of Kidscape; and Baroness Methman.

#### CONFERENCES...

March 11  
Values and child-rearing Voluntary Organizations Liaison Council for Under-Fives seminar with Professor Michael Rutter in south-west London. Details from VOLCUP: 01 278 3459.

March 14  
National Association for the Support of Small Schools conference and open forum at Connaught Hall, London on Perspectives on small schools with Giles Radice, Tad Wagg and Mike Davies. Details from Molly Stiles: 0603 613088.

March 24  
Nuclear energy — the outlook following Chernobyl Sixth Form conference at the House of Commons organized by the Council for Education in World Citizenship. Speakers include Peter Walker, John Collier and Jonathan Porritt. Tickets £1 from Margaret Quirk, CEWC, Seymour House, Seymour Mews, London W1H 9PE.

March 25  
Information technology and special

needs in further education National Bureau for Handicapped Students seminar and open meeting for lecturers and advisory staff at the NW ACCESS Centre, Oldham College of Technology. Details from Mrs D Walker, NBSHS, 336 Brixton Road, London SW9.

March 26  
Contemporary British history 1945-70 Sixth form conference at the London School of Economics organized by the Institute of Contemporary British History with Brian Lapping, Ben Pimlott, Anthony Seldon, John Barnes, Peter Shore and Peter Hennessy. Tickets £2 from Pippa Lewis, 30 Stone Lane, Lydell Mill, Swindon SN5 9LD.

#### COURSES...

March 25, April 1 and 8  
Three sessions organized by the Centre for Educational Development and Training (CE/HD) on Getting to know more about working with small groups. Details from Mrs Madeline Agnew, Centre for Educational Development and Training, Manchester Polytechnic, Elizabeth Gaskell Sts, Hathersage Road, Manchester M19 0JA.

April 10-12  
National Organization for Initiatives in Social Education annual study course on racism and sexism awareness at Birmingham Polytechnic. Fee £50 (residents), £35 (non-residents). Details from NOISE Course Organizing Committee, 37 Willow Crescent, Belsall Heath, Birmingham B12 9NS.

April 12-16  
Association of Workers for

Maladjusted Children course on Life skills and the curriculum — the core, education and therapeutic provision for emotionally and behaviourally disturbed children, at the College of Ripon and St John, York. Speakers include Roger Burtland, Telford Griffiths and Margaret Robson. Fee £120 (non-members £135). Details from Alan Fox, 1387 Course Booking Office, Longview Lodge Road, Cawthra, Gwent NP23 1QS.

#### EVENTS...

March 7 and 10  
Photographic workshops at the Commonwealth Institute, Kensington High Street, London W8. The first, Photographic contents on March 7, is for those involved in media education, the second, Representing cultures on March 10, is for teachers on using photography in the classroom. Details from the education department at the Institute.

March 18  
Psychoanalytic insight in the classroom: asset or liability? Lecture by Susan Dylis at the Tavistock Centre, 120 Belsize Lane, London NW3 6JL 7 pm, organized by the Forum for the Advancement of Educational Therapy.

March 18  
National Association for Gifted Children and the Polinail Trust: open meeting and discussion on working with children with special needs arising from a high degree of untalented potential, North Westchester community school, Studio Theatre, North Ward Road, London W4 at 7.45 pm with Anne Cornish-James and Jean Sargent.

March 19  
In-service training on weather satellites organized by Adrian Beaumont, head of physics, Whitmore High School, Harrow. The school is testing a number of satellite tracking systems during March and is establishing contacts with schools around the world. Details from Adrian Beaumont, Whitmore High School, Portico Avenue, Harrow, Middx HA2 9AD.

#### INFORMATION

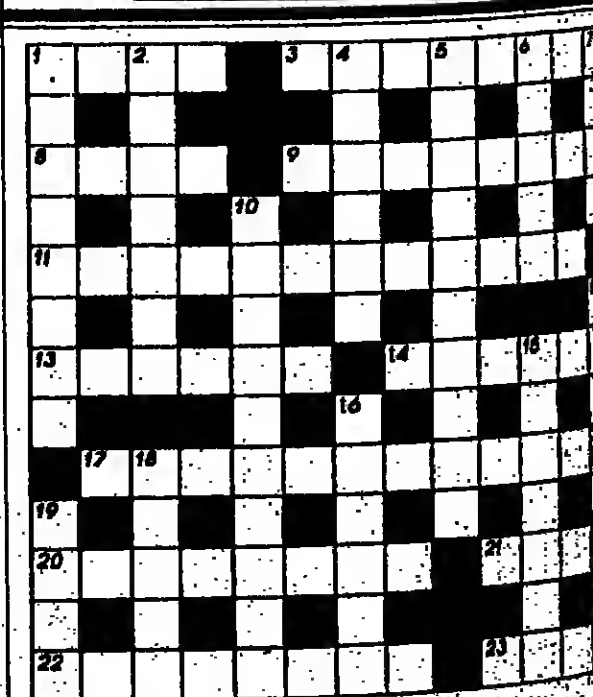
Art Exhibition  
The closing date for entries for the Cadbury's National Exhibition of Children's Art is April 18. The exhibition is open to anyone under the age of 18. Details from Cadbury's National Exhibition of Children's Art, Granby School Lane, Durham Masey, Alnham, Cheshire WA14 6SZ.

Textiles  
During the summer term Mrs Vivian Bell will be undertaking a teacher fellowship at the Essex Institute of Higher Education on weaving, spinning and dyeing in junior schools. She would like to hear from teachers who teach any of these subjects in junior schools either as a specialist topic on textiles or as part of the art and craft curriculum. Please write to her at Hebdenholme Junior School, Forsyth Close, Springfield, Chelmsford, Essex.

#### PUBLICATIONS

Summary of the 1986 Education Act by Joan Sells for the Advisory Centre for Education, price £2.25 from ACE, 18 Victoria Park Square, London E2 9PB.

### No 295 CROSSWORD by Ruth



#### Across

- 1 Childishly claims the luggage (4)
- 3 Frank ceased being funny when father came in (9)
- 8 Work like a pack of snobs (4)
- 9 Match money playing dice (3)
- 11 I am under some order for a minor legal offence (12)
- 13 Possibly, isn't it, a hapless novelist? (6)
- 14 He goes round finding pot-holes (6)
- 17 Will check on both sides? (12)
- 20 The impostor who was once a collier (6)
- 21 Keen to make a

#### Down

- 1 Unconventional description of Old Prague (8)
- 2 Change of years, politics and lubricants (7)
- 4 Given support or cut out (6)
- 6 Protein, girl in acute trouble (10)
- 6 Leave work? (4)
- 7 Still in unit (4)
- 10 Wholesome police

# Educational Supplement

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Going to the wall: the former head of Norbury Manor high school in south London, Mr Peter Fletcher, at the controls of an 80-ton demolition crane used to knock down the building in which he taught for 11 years. The school's bell tower is being preserved to form the centrepiece for a new block of flats in Croydon.

## NAS/UWT pulls out of teaching council talks

by Bert Lodge

The second largest teacher union has withdrawn from negotiations to set up a general teaching council, it was revealed this week.

The news came hours after the National Association of Schoolmasters/Union of Women Teachers walked out of the staff appraisal talks the Government initiated last year. The union gives three factors in its decision to boycott the talks to establish a professional body to control entry, standards and discipline — a structure favoured by many teachers:

- the Government's attitude to the public services in general and education in particular;
- the attitude of the Government to the pay of public sector workers in general and teachers in particular;
- the attitude of the Government to the role of trade unions, bearing in mind GCHQ and very recently the Teachers' Pay and Conditions Act.

Teachers prepare for action, pages 6 and 7

"Given the factors listed above, there must be a grave danger that the Government would take proposals for a GTC and misuse them to suit its own purpose."

Recent events prove the Government cannot be trusted to respect the fundamental rights of teacher unions, the union says in a document to be put before its annual conference in Bournemouth next month.

The formal gesture of withdrawal is contained in a letter from Mr Nigel de Gruchy, deputy general secretary of the NAS/UWT, to Mrs Mary Russell, secretary of the Universities' Council for the Education of Teachers, which initiated negotiations more than three years ago.

The talks had reached an advanced stage with the cooperation of the 17 professional associations involved.

Details of the functions of a general teaching council were broadly agreed by a working party last year (TES, October 3) and were sent out for consideration by the executives and possibly the annual union conferences. They were accompanied by draft proposals for the composition of the council's all-important governing body, the crucial issue on which the last attempt to set up a GTC, nearly 16 years ago, foundered.

The draft proposals specify the numbers of seats for central and local government — 6, churches — 1, teacher trainers — 6 and other interested bodies such as the TUC, the CBI and parents' organizations — 4.

But they avoid any specific allocation to individual teacher unions — allowing them 28 seats to be shared out.

## CTCs 'lure thousands of retired staff'

Teachers who have opted out of the profession are ready to return to the classroom in the Government's planned city technology colleges, Mr Kenneth Baker, the Education Secretary, says in an interview published in today's TES.

He believes the colleges will "act like a magnet and draw hundreds of thousands of teachers out of retirement or out of early retirement".

Mr Baker says: "We had many letters from teachers, especially those who have worked in inner-city areas, and they tell me that this is the sort of thing that they would be prepared to come back to teaching to do."

"They tell me they've been braced by the hassle of inner-city schools."

Mr Baker also reveals that he believes that two CTCs will be operating by September next year. Details of the first school college — to be established in Conservative-controlled Solihull — were revealed two weeks ago.

In addition, he says that children going to go to CTCs will have to face some form of aptitude testing "to determine that they have a particular aptitude for technology, although he adds: "We don't want schools to be selective in the way that grammar schools are."

Some authorities are more creative than others and two London boroughs, Hounslow and Brent, are actually

Baker's vision of CTCs — page 41

## Rate-capped councils lift redundancy threat

by Barry Hugill

The jobs of teachers working in the nine local education authorities rate-capped by the Government are safe because of skilful use of "creative accountancy" techniques by politicians and their treasurers.

Despite initial dire warnings from the Labour-controlled authorities that jobs and services were at risk following the announcement in January by Mr Nicholas Ridley, the Environment Secretary, of the rate-capping, most of them will produce "standstill" budgets for the coming financial year.

The worst effect of the rate-capping will be a freeze on the appointment of new teachers to replace those leaving through natural wastage. And this will be modified by the continuing decline in secondary school rolls.

The I.e.a.s. concerned are the ILEA, Haringey, Brent, Newham, Hounslow, Newcastle, North Tyneside, Sheffield and Gateshead.

Not all have fixed their budgets for the coming year, but all have decided that creative accountancy is preferable to serious cuts.

Some authorities are more creative than others and two London boroughs, Hounslow and Brent, are actually

budgeting for growth. The increased spending in Hounslow will be minimal, but in Brent it will be in excess of £1 million. Cuts are likely in Gateshead and Newham, but there will be no danger to jobs.

In most of the authorities there will be increases in the price of school meals and little, if any, maintenance work will be carried out on schools and colleges.

The failure of the Environment Secretary to control effectively the spending of Labour authorities despite his stringent penalty system has renewed demands from Tory backbenchers for legislation to outlaw creative accountancy.

Mr Ridley has taken steps to curb deferred purchase schemes under which authorities such as Liverpool, Manchester and Sheffield financed capital projects by borrowing on the international money markets.

And he is understood to be investigating ways of curbing many of the techniques now being used by borough and city hall treasurers at the behest of their political masters.

The aim of creative accountancy is to reduce its spending.

the reserves or from contingency funds such as those set up to cover the repair and maintenance of buildings, authorities provide themselves with much needed "cash in hand".

And by transferring revenue spending to the capital account — a complex accountancy trick much loved by treasurers — an authority can effectively reduce the apparent, but not the real, expenditure for the year.

The apparent reduction in expenditure is important for a rate-capped council because it provides an opportunity to escape capping the following year. And, because the amount of cash made available to local authorities by the Treasury decreases as their spending increases, a local authority can by creative accountancy "disguise" its real spending and win an increase in Government funding.

● The London Chamber of Commerce is supporting the demand from ILEA's Labour leadership that the Government should provide it with additional cash to pay for the teachers' pay settlement. But the chamber is demanding that the authority introduces rigid economy measures to reduce its spending.

### THIS WEEK

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Stuart MacLure: edge of the abyss



ILEA: mortgaging the future



Scruton answers



Call forer: jazz in Bristol



EXTRA: Computers in education 41-64





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## The hidden A level agenda

It would be a mistake to read too much into the apparently restrictive terms of reference of the A level review committee reported in last week's TES. They are deliberately not the last word in clarity and precision – indeed, they are not even the last word.

The committee, appointed by the Secretary of State under the chairmanship of Dr Gordon Higginson, an engineer who is vice-chancellor of Southampton University, expects to receive further guidance upon its role before its first meeting.

Anyone with a passing familiarity with the television programme *Yes Minister* will have no difficulty deciphering the real messages of Mr Baker's announcement. For "In the light of the Government's commitment to retain GCE A level as an essential means of setting standards of excellence", read "I am not daft enough to be seen tinkering with A level this side of an election..." and in place of "with the aim of maintaining or improving the present character and rigorous standards" insert "...but something needs doing about it urgently".

This is not a wholly cynical view; indeed, it is to Mr Baker's credit that, coming relatively late upon the argument for such a review, he has managed to get it under way at such a politically inauspicious moment. The clue to all this, of course, is in the way such apparently light restrictions on what the committee has been asked to do are immediately contradicted by the people he has asked to do it. For whatever else you might think, they are clearly people of independent mind and not yes persons.

Whatever the letter of their instructions says, they should, and no doubt will, take a broader view of the academic sixth form than that suggested by the Secretary of State's political announcement.

They are starting work several years late and working to a tight schedule. They have to report by Easter next year, which in reality means they have to have their arguments sewn up by Christmas. But they cannot afford the luxury of saying they'd rather start from somewhere else.

Nor can anyone else involved in sixth form exams afford to wait for Higginson. First, because whatever

eventually emerges from the committee is unlikely to influence the sixth form before the 1990s. So the exam boards, the Secondary Examinations Council, and the sixth form teachers need to be at action stations long before then to cope with the collision between the new GCSE approach and the old GCE A level syllabuses in September 1988.

And second, anyone will anything to say to the committee about the sixth form curriculum needs to work up evidence now to a state of instant readiness for this lightning review.

The committee is clearly expected to sketch, in broad brush terms, the principles that should govern the main academic exams for the sixth form; and since the sixth form is irredeemably bound up with its exams, therefore, the principles that should govern the sixth form curriculum. Though it is never referred to in the terms of reference, it is inconceivable that the committee will not also consider, *inter alia*, the fledgling AS levels.

That immediately brings in considerations of breadth – now favoured by the university vice-chancellors – versus the specialization which university entrance tutors are said to demand.

Red rag phrases in the terms of reference like "consistency" are redolent of moves to limit the range and number of A level syllabuses and "essential content" immediately invites the question, "essential for whom?" Essential for the single subject university department, and therefore for only a minority of those studying a given A level? Essential to a broader range of undergraduate courses? Or to those taking omeo?

Certainly the Cockcroft report – the closest we have come to a mould-breaking education commission in recent years – rejected the notion that A level maths syllabuses should be dictated by university mathematicians. No doubt Sir Roy Harding, a member of Cockcroft (and Cockcroft's deputy at the SEC) and now one of Dr Higginson's famous five, will remind his new colleagues of the background.

Many of the arguments are well rehearsed. They were touted to all previous attempts to reform A

level and have been revived quite recently by the vice-chancellors, the SEC and the examination boards, among others.

Indeed, the GCE boards regard Mr Baker's initiative as hijacking their own proposals for an orderly revamping of sixth form exams which they put to the Secretary of State last year.

Mr Baker can rightly argue that wider counsels than the boards should prevail in such a review. The boards favour an evolutionary, bureaucratically tidy, change in sixth form exams. They speak for the considerable number who hope for a gradual introduction of AS levels to offset over-specialization. For the boards are not the only ones who doubt their own capacity – or that of the schools – to mount another major advance while still shell-shocked in the aftermath of GCSE.

But the alternative to the gradualist approach, a "big bang" change to a radically different system has its adherents too, like Professor Alan Smithers and Dr Pamela Robinson (see page 19) who would like to see something along the lines of the International Baccalaureate.

Either way, the committee will have to address two fundamental issues. The first is the resource implications of broadening. The GCSE has shown that the true development costs of change are often underestimated and any extension of compulsory maths or science into the sixth will inevitably require even more of the very scarce specialist teachers, unless these moves are coupled with some innovative technological or distance learning solutions to such shortages.

The second has to do with credibility and choice. There is a strong belief that the sixth form can never be broadened voluntarily until fears that it will disadvantage those students hoping for a university place are met. This requires nothing less than a positive incentive: universities have to prove a preference for the broadly educated. They may even have to consider the reintroduction of some kind of matriculation requirement in the form of a grouped certificate.

## Second opinion

### Fighting for Oxford's future

If the media are to be believed, Oxford's common rooms are in a state of ferment over the election for a new university chancellor. Some 40,000 MAs are eligible to vote this week at the election to the Earl of St John.

There are two prevailing opinions in most of the coverage – that it does not really matter who is elected, and second, that it does not matter who is elected.

The chancellorship is no longer as simply a ceremonial role, as it was days of Curzon, Cave, or St John. With the future of the university much at issue, it is now acknowledged that the new chancellor will have a major part to play in the university's future. All eyes are now turned to accept this.

Oxford may seem prosperous. Reality is that even the well-to-do are suffering. The second round of University Grants Committee cuts mean an annual shortfall of £10 million for Oxford – hence, the shedding of 140 academic posts, vital professional chairs unfilled, dons queuing to go abroad, science slipping from the frontiers, and even the famous Oxford Playhouse to be closed this year. Though the effects would take time to show, dons talk of Oxford being the international super-league.

Edward Heath has been the most explicit about an impending crisis. The campaign team has stressed the premier's commitment to the university. The branch, which wants the local education authority to introduce effective monitoring of its equal opportunities policy, says many of the questions asked at interviews are still sexist and irrelevant.

In addition to being asked whether they were on the pill, women were also asked what arrangements they made when their children were sick and "How could an attractive woman like you cope with boys?"

For Bedfordshire Council to call itself an equal opportunities employer may have been rhetorical optimism, comments the report of a survey the branch conducted. Some interviewers clearly have stereotyped images of women teachers – they are not the breadwinners, therefore their careers are less important than men's and women have the sole responsibility for caring for children, it adds.

The report points out that contrary to popular belief all women teachers are not married with young families. In fact, most women teachers under 40 do not have children.

Neither is it true that women leave to have children very soon after they start teaching. Sixty-three per cent

## Rum do has grammar school lobby in a spin

by Barry Hugill

Sixth-formers at Sir Thomas Rich's grammar school in Gloucester appeared this week to have caused a hiccup in a campaign to prevent its demise.

The Alliance-controlled Gloucestershire County Council is doing its best to rid the city of its five grammar schools.

The chosen method of attack is to allow numbers to fall so low that the schools become unviable. The problem for the council is that Mr Kenneth Baker has intervened on behalf of the grammar schools and ordered the county to up the rolls.

Local Conservatives have rallied round the flag and are determined that selection should continue in the city – hence the "save our schools" campaign, a major part of which is to stress the importance and desirability of sixth forms.

So allegations that the boys of Sir

Thomas Rich hurled obscenities at the quizmaster of a Radio One show for schools, "The disc jockey Mike Reid, and shouted answers from the audience to give their team an advantage could not have come at a worse time. The recording of the programme, *Pop of the Form*, was eventually abandoned.

Whether the behaviour of the teenagers was due to boisterous good spirits, or the bottle of white rum that had been circulating, is unclear.

The chairman of the school governors, Mr Ken Morris, said: "This is an internal matter. The headmaster and I have dealt with it as we saw fit."

Despite the boys' efforts, though, the grammar school lobby appeared to have won a major victory when, on Wednesday, the council, under pressure from Mr Baker, agreed to increase numbers in the threatened schools.

## NUT uncovers 'sexist and irrelevant' job interviews

Diane Spencer

Women applicants for teaching posts have been asked at interviews whether they are on the birth-control pill, according to the Bedfordshire branch of the National Union of Teachers.

The branch, which wants the local education authority to introduce effective monitoring of its equal opportunities policy, says many of the questions asked at interviews are still sexist and irrelevant.

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The report points out that contrary to popular belief all women teachers are not married with young families. In fact, most women teachers under 40 do not have children.

Neither is it true that women leave to have children very soon after they start teaching. Sixty-three per cent

have never had a break in service to raise a family. Those that have had a break in service, taught on average for six years before the break. The average break in service was five years.

And women are just as keen on their careers as men. There was no evidence to support the assumption that women, once married, lost interest and commitment to their work.

The survey showed that more than half the sample of women had applied for promotion during the past five years, compared with 75 per cent of men. But the report comments that a greater proportion of women are in primary schools where promotion chances are fewer, and the nature of the questioning they have to endure does nothing to encourage them to apply.

In all sectors of schooling, the vast majority of women are on Scales 1 and 2 while most men are on Scale 3 and above. The number of men on more senior scales is disproportionately small.

"The preponderance of schools with male heads to control of an almost entirely female staff has led some pupils to nickname these institutions as 'harem' schools," it adds.

The report says the NUT will be monitoring the allocation of promoted posts in the new salary structure. It calls on the local education authority



Going solo: Diane Hunt, aged four, is the first girl to enrol with the 45 boys of Torquay's Kirkstead College since the independent school went co-educational in January.

## Call for girls-only science

by James Melkile

Mixed secondary schools should give girls a second chance to follow scientific and technical subjects by offering single-sex classes, the TUC said this week.

Such efforts to break the divide between traditional male and female studies would require changes in the Sex Discrimination Act, according to its new report on equal opportunities in education and training.

At present, schools may separate boys and girls where it can be educationally demonstrated that participation and attainment are increased in single-sex groups.

But the law demands equal access

and equal treatment. Therefore, schools cannot offer only to girls the opportunity to "catch up" years after they have made option choices at 13 or 14, ages at which they dropped subjects.

The TUC urges positive action to be allowed and calls for the spirit as well as the letter of the existing law to be more rigorously observed.

\*The Education and Training of Girls and Women – A TUC Report costs £1 and is available from TUC Publications Department, Congress House, Great Russell Street, London WC1B 3LS.

## COMMENT

### Computer doldrums

Until recently, articles on computers in education were full of hope and excitement. Now the depression and worry that pervades so much of the education system has spread there too (see *Computer Extra*, pages 41–44). The articles are full of problems, missed opportunities, and tantalizing possibilities that no one believes will be realized on any significant scale in the foreseeable future.

The need now is for some serious strategic planning. Questions have to be answered, and priorities set. What level of introduction to information technology should all pupils have at various stages in their education, from primary to higher education and training? Should computer studies be dropped as a GCSE subject, in order to give all students more access to available hardware?

What is the potential of computer-assisted learning, or interactive videodisc, at different stages? Could they be used more systematically to raise standards, particularly in shortage subjects? And, depending on the answers to such questions, what provision of hardware, software, and teacher training is needed for the next few years.

There is by now plenty of experience that can be brought to bear on these questions. Perhaps, in this case, we really do need a committee – a latter-day educational Alvey – but only if there is real political will to implement its findings.

Some of the developments are being tackled at the European level. Here,



thanks mainly to the European Commission, there has been some progress in recent years. The Not Invented Here syndrome is still very strong, but it is increasingly clear that no country on its own can provide the investment needed for research and development, and collaboration is gradually developing (see Brian Green and John Wood's article, page 41).

When the Microelectronics Education Programme was wound up, we were told that it was time for consolidation of what had been achieved. But it is impossible to consolidate on a national level when provision is so unequal, depending on a TVET scheme here, a dynamic teacher or local authority adviser there, funds from parents or a friendly neighbourhood company somewhere else, a city technology college on the horizon. In this high-cost and high-potential area, even more than in any other, a national approach to curriculum and funding and development.

### Hillgate defended

Although the large number of column inches generated by the Hillgate group's pamphlet *Whose Schools?* revealed a great deal about the paucity of news in the dead days between Christmas and New Year, Professor Scruton and his friends nevertheless feel that "the objections raised in the press... have been phrased in dismissive and derogatory language". On page 21 he sets out his answers in the hope of carrying the argument a stage further.

The Hillgate proposal is that all schools should be disestablished – turned into private educational trusts – and that public funds for education should be channelled through *per capita* payments, so much a head for every child of a given age. Parents would thus be able to apply to send a child to any school. If a child were removed from school A to school B, the payment would move with the child.

This is a version of the voucher idea – the creation of a pseudo-market for education. On top of all other monitoring procedures – by HMI, examinations or whatever – parents would apply the discipline of the market place and decide which schools prospered, which failed.

This is the proposal. But Professor Scruton and his friends have chosen to wrap it up in a great deal of incidental comment on GCSE, teacher training, local education authorities, child-care, and so on. The intrinsic value of education, of course, is the only thing that matters, on which the new right have opposing opinions, often discussed from the main

proposal which stands or falls on the ideological belief that private is good and public is bad.

Even those who might, pragmatically, think that a few schools financed in the way he suggests might add variety to the educational scene – those, for instance who support the city technology colleges (if there are any) – might nevertheless reject the dogmatic conviction that a network of private schools must be better than any system provided by public authorities.

Unfortunately, it is when Professor Scruton lets fly on side issues that he goes over the top. "Teaching...", he says "should be centred not on the child but on the subject...". This is clear enough – a restatement of a familiar view. Then the philosopher takes over and he follows his argument over the cliff... "for it is the subject which is at risk in the educational process. The danger is not that children will lose interest, but that skills, culture and knowledge will be lost".

What is missing is any obvious connection between Professor Scruton's educational philosophy and his proposed remedy. Unless, that is, you believe that parents in the market place would unite in choosing the package of cultural values which Professor Scruton chooses to deploy.

## no comment

"Biological projects: Vicky has brought a caring attitude and enthusiasm to her study of young mice, and it's a great pity that some have perished in the process of her work."

"The report of the Education and Training of Girls and Women – A TUC Report costs £1 and is available from TUC Publications Department, Congress House, Great Russell Street, London WC1B 3LS."

## IN BRIEF

### Duke's remedy

The Duke of Edinburgh made a veiled threat at the teaching profession this week in his presidential address to the Central Council of Physical Recreation.

In a list of measures to rejuvenate sport, particularly competitive sport in schools, he called for more curriculum time to be devoted to the subject. "If this is too much to expect of teachers then perhaps the job should be given to a national physical education service to be in conjunction with the governing bodies of various sports," he added.

### Hammer attack

Teachers' leaders in Liverpool were due to hold talks with senior education officers this week to express concern about violent attacks on teachers.

The move follows a statement in which a teacher attacked in two schools armed with a hammer. Mr Christopher Githam, aged 55, deputy head of 100-pupil Priory Comprehensive School, was attacked on 12 March.

### Statement fear

Many handicapped children have not been given adequate statements of their special educational needs, the House of Commons Select Committee on Education was told this week.

The National Association of Head Teachers said it had asked 400 special school heads if their pupils had special needs statements under the 1981 Education Act, in line with the provision also available at the school rather than pupils' actual needs. The unpublished results of the survey show that 28 per cent thought this was often the case and 55 per cent said it sometimes happened.

### Subsidy plea

A special subsidy should be paid to schools to poor areas as part of a £650 million cash injection into services for children, according to a campaigning document from the National Children's Home.

The charity, which yesterday launched a "facilities" into the area, said the next week's Budget should forgo a half penny cut in income tax and divert funds to children's services.

### Poly status plan

Local authority leaders are trying to head off the Government's plans to take control of the polytechnics and large colleges by rushing through an agreement on corporate status.

They were meeting trade unions and polytechnic directors yesterday in an effort to clear any remaining obstacles inside the institutions. They are bringing forward the next meeting of the committee of the National Advisory Body for a month to have the earliest possible debate on the final report of the good management practice inquiry, which will recommend corporate status for major institutions.

### Alcohol abuse

The Government-led drug education campaign is deflecting resources from the more pressing problem of alcohol abuse among young people, Mr Eric Bolton, senior chief inspector for schools, confirmed this week.

He told journalists at a seminar on drug abuse led by the Home Office minister, Mr David Mellor, that the problem of under-age drinking remained the most urgent concern for most youth workers.

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TEACHERS' PAY

Industrial action in schools resumed on Wednesday following national union ballots. Here and opposite *TES* staff report on the progress of the dispute and assess its likely effects on different parts of the country

# AMMA strike decision awaited

The Assistant Masters and Mistresses Association, representing nearly 90,000 teachers in state schools, announces next week whether it will add to the strike disruption which began closing schools once more on Wednesday.

The National Union of Teachers and the National Association of Schoolmasters/Union of Women Teachers, have embarked on a rolling programme of half-day walk-outs and rallies following big votes in favour of industrial action against the Government's withdrawal of their negotiating rights. AMMA has balloted members on a national half-day strike on March 24 and its leadership is considering whether it should follow the two other unions in withdrawing from appraisal. Sixty per cent of those voting must support the protest strike before it can take place, but the executive voted 75-0 in recommending the action last month.

AMMA has already joined with the NUT and NAS/UWT, however, in telling Mr Kenneth Baker, the Education Secretary, that they will only meet him about the 16.4 per cent pay package he is forcing on the profession after "consultation" if he agrees that direct negotiations can be restored in time for the April 1988 pay round and that the money for this year's rise could still exceed the £608 million limit set by the Government.

The demand for more cash is unlikely to succeed, but Mr Baker, speaking on BBC Television's *This Week Next* programme on Sunday, went further than he has before in spelling out "a better arrangement for determining teachers' pay" once the interim period of imposition was over.

"There are broadly two avenues. One is some form of independent review body with no-strike agreements attached or one for some form of collective bargaining and a separate position for heads," he said.

"Now, I think we should start talking about this as soon as possible. And I hope with those undertakings that many teachers will not indulge in the prolonged campaign of disruption."

Government spokesmen had previously indicated that future pay machinery was unlikely to be agreed before early 1989, at the earliest, and after guidance from the independent advisory committee on pay and conditions to be set up later this year.

Mr Baker's latest statements may mean the "breathing space" could be shorter. He certainly seems to have hardened up his views on separate negotiating for heads, which is wanted by the National Association of Head Teachers but not the Secondary Heads Association or other unions with heads in their ranks.

Mr Baker sought to play down the size of NUT NAS/UWT ballot majorities, saying votes had been cast before the details of his pay package were spelled out last week. He also said the way the ballot question was worded - asking members if they would strike and take action short of strike against the loss of negotiating rights - had distorted the results.

But late-arriving ballot papers seemed to confirm hostility among the grassroots this week - and the teachers are hoping for another strong rebuff to the Government from AMMA.

The NUT figures announced at a press conference last Friday were 92,264 members in favour of the action, 23,277 against and 306 spoiled papers. This reflected a near four-to-one "yes" vote on a 62 per cent poll. By that evening the figures had risen to 99,334 (yes), 25,214 (no), 2,494 abstentions and 337 spoiled papers, and officials were counting more late arrivals this week.

The NAS/UWT figures were 54,462 in favour, 11,111 against and 485 spoiled papers, showing nearly 85 per cent of the voters in a 58 per cent



poll behind the union leadership. The lower turn-out is thought to result both from the union's shorter tradition of balloting members and its unity with the alternative pay and conditions package signed by local authority employers, the NUT and AMMA.

Nevertheless, late-arriving votes put up the NAS/UWT figures to 55,189 (yes), 9,507 (no), and 496 (spoiled) by Wednesday.

The two big unions have still to announce other disruption which will last "months rather than weeks" unless the Government agrees to restore negotiating rights for next year. But they say new arrangements could be worked out in three weeks if Mr Baker showed goodwill. The unions are examining details of the contract Mr Baker is proposing for the profession, but refusal to cover for absent colleagues is among the most likely sanctions.

The withdrawal from all appraisal experiments, both nationally-run pilots and other local authority and school-based trials, was expected. And, in spite of the walk-out, the Department of Education and Science this week went ahead with the appointment of two teams of consultants to assist the six pilot schemes in a indication that it thinks appraisal will

soon be back on the agenda.

Dr Ray Boland and his team from the National Development Centre for School Management Training at Bristol will ensure the pilots provide a base for national guidelines, while Mr Howard Bradley and colleagues from the Cambridge Institute of Education will evaluate the schemes and provide an independent report to the national steering group of unions, local authorities and DES representatives.

The National Association of Head Teachers, which has been at odds with other unions over the last few months, may also advise members not to co-operate in appraisal while remaining ready to talk about broad principles.

The union believes it is essential that appraisal has the support of all teachers to work.

Meanwhile, an Irish teachers' organization warned at the weekend that any move by the Northern Ireland Education Minister, Dr Brian Mahoney, to interfere with the free collective bargaining traditions governing teachers' salaries and conditions of service in Ulster would be stoutly opposed.

"We will not stand idly by if our rights are removed as crudely and provocatively as has been done in England and Wales," the general secretary of the Irish National Teachers' Organization, Mr Al Mackle, told his union's annual conference.

The conference was also warned of "an obvious trap" whereby the current agreement to allow the Northern Ireland Salaries Negotiating Committee to retain its rights could be exploited to introduce a differential regional basis for salaries.

● The Joint Matriculation Board said this week that O and A level results for 1986 were not affected by teachers' industrial action.

James Melkile

## Labour sets 30-pupil class target

Labour aims to reduce class sizes to a maximum of 30 pupils over the next four years as part of a comprehensive plan to raise standards.

The exact cost of the proposal is uncertain but is sure to add to the £20 million bill, over two years, for extra books and equipment, more teachers, particularly in key subjects such as maths and physics, and new rights for parents.

More school building and maintenance would also result from attempts to boost capital investment by local authorities, thus providing more jobs for construction workers.

The class size target is part of a plan to increase the number of school primary teachers to training and considerably further than the target of 10,000 set by the Labour-led local authorities.

Labour's education and training pledge, page 13

Teacher unions on part of the general conditions proposals refused by the Government - and left out of Mr Baker's final package.

The announcement by Mr G. Radice, Labour's education spokesman, on Tuesday coincided with publication of a survey by the National Association of Head Teachers in staffing of primary schools.

This indicated that more than half five classes in a sample of nearly 100 schools had 30 children or more. The NAHT says that 52 per cent of all classes in the schools surveyed in January last year were over-sized, and the union sets a class-size limit of 25 pupils in classes of more than one group.

Mr Radice, who was a guest speaker at an NAHT conference on nursery education, also said that he hoped to improve nursery opportunities.

## Reluctant voters for new strikes

Teachers at the Bohunt School in Liphook, the heart of Hampshire's Conservative commuter land, are horrified at the thought of renewed industrial action. But they are so angered by the renewal of their negotiating rights that they have voted almost unanimously to strike.

Few union members at the school are likely to have supported Labour at the last general election, according to Mrs Pam Miles, the acting deputy head. Mr Colin Jackman, a Scale 2 English teacher and National Union of Teachers member, said: "We are not right livers. We are a very conservative bunch of people who are getting extremely angry."

The school's staff realize that their action will probably be ineffectual. "It's a war of attrition. I can't see

people hanging on for long; teachers will drift back," said Mr Dave Slade, an experienced CDT teacher on Scale 3. But teachers at Bohunt feel they must make a token protest. "We can't just roll over and let our tummy be tickled," he insists.

Like Mr Slade, many teachers see the loss of their negotiating machinery as the latest move in the gradual erosion of union rights which started with the miners and continued at OCHQ - the government Intelligence Centre at Cheltenham. "If we don't take a stand, firemen and the Civil Service will be next," said Mr Slade.

As a member of the Professional Association of Teachers, Mrs Ann Auld, a Scale 1 maths teacher, will be one of the few on the staff who will not take action. She is hoping that the Government will set up a replacement

for the Burnham Committee and is worried that some of her colleagues may be over-reacting to the imposed deal. However, like them, Mrs Auld believes the new pay structure provides little incentive for experienced teachers on Scales 1 and 2.

Bohunt School, an 11-16 community comprehensive, is only likely to qualify for five or six incentive payments of £500 for the basic scales. This will not be enough to reward Scale 2 teachers who are running departments, let alone attract teachers in shortage subjects.

Because of the high cost of housing in the area (a one-bedroom flat costs £30,000), the school has been trying to replace a CDT teacher for four terms. There are also vacancies for staff both in business and computer studies.

Mrs Miles does not think the £500 allowances recently announced by Mr Kenneth Baker, the Education Secretary, will staunch the flow either. And she is concerned that there will be nothing left over to reward good teachers on the lower scales, who are the most bitter about the new pay structure.

"Teachers on Scales 1 and 2 are furious and saddened that, after several years' teaching, they will be on the same salary as teachers who qualified last year," said Mr Graham Roff, head of humanities and the school's NUT representative.

Mr Jackman, whose views appeared to be typical, added: "I've had no holiday for five years and I can't afford to support my wife and family. My wife says I give more to school than to my own family. When you are paid peanuts for abusing your own family, it's too much."

Staff were also angry that the new

conditions of employment did nothing to restrict class sizes or to increase preparation time. Many said that some of the stipulations, particularly the number of hours worked, were unclear. "The contract doesn't specify the duties which a headteacher can reasonably expect a teacher to carry out," said Mrs Miles. "Staff at some schools could be put at the mercy of an autocratic head."

Despite their anger, teachers are in despair at the prospect of further action just when the school has returned to normal. "No one wants to go

through that shambles again," said Mr Bob Snibey, head of creative studies and the school's representative for the National Association of Schoolmasters/Union of Women Teachers.

Staff are particularly concerned about fifth-year pupils, who have been affected by action since they were in the third form. Nevertheless, they believe that strikes harm the teachers more than the pupils, as they have to ensure that children catch up on the work they have missed. Last year's exam results were the best over 10 years.

During the last dispute, teachers organized a campaign to explain the cause of the strike to the local community. This year, they are convinced that they have already lost the battle for public support.

Susanah Kirkman

TEACHERS' PAY



Scales of the problem: the NUT's Graham Roff (left) and Colin Jackman ponder the Baker package

Staff are reluctant to spoil the good relationship they have with parents. In the past, many parents have supported them; they appreciate the good exam results and the fact that more than 90 lunchtime activities are run by the staff.

## Militancy's bitter cup wins few supporters

Elland Road, the scene of past glories for Leeds United, will soon be the rallying point for thousands of Yorkshire teachers as yet another series of strikes hits schools.

It is an ironic choice of venue. Three years of on-off guerrilla warfare in education have devastated school sports programmes across the country. Nowhere is the long-term effect on children's sporting life more keenly discerned than at South Parade Junior school in Oussett, Wakefield.

"If this disruption carries on, it will be the end of team football in schools. It's a shame because school football has been a proud tradition for so long - but I think it will all go." Such is the verdict of Mr Glyn Taylor, the National Union of Teachers' representative who is responsible for PE and soccer at the school.

Whether the unions will get a good 'bye' at their Elland Road rally remains to be seen. Yorkshire teachers are determined as ever to secure the pay and conditions they believe the profession needs - and deserves - and not on terms dictated by Mr Kenneth Baker.

The NUT has requested a 7.5 per cent vote to renew action, while the National Association of Schoolmasters/Union of Women Teachers' anti-Baker vote is around 80 per cent. But in the traditionally non-militant primary schools, feeling is not so evident.

Only two or three of the eight teachers at South Parade school will troop through the Elland Road turnstiles to register their protest. The imposed deal has gone a long way to placate - though not satisfy - a disgruntled workforce.

Money is no longer the major complaint. "It is the imposition that we do not like," said Mr Taylor. "We have just got the Baker scales. They are not vastly different to the Axa agreement. The real problem is in the conditions. There is no mention of class sizes. We need to be pressing for class sizes down

### WAKEFIELD

to 25... teaching is a much harder job than it was 20 years ago."

If militancy does not loom large at the school, however, the picture is no different from the past three years. Whenever a strike call has been issued, only a few staff members have responded. That pattern is expected to stay the same. School sport, other out-of-hours activities and formal contact with parents in the evenings will, though, cease once again.

Like many other primary schools, however, the impact has been minimized because staff have been prepared to bend the rules over industrial action to protect their pupils. Staff meetings have been held during breaks and parents have been seen informally or during school time whenever the need has arisen. It is a conflict between professional and trade union loyalties.

Mr John Gaunt, the headteacher and deputy secretary of the Wakefield branch of the National Association of Head Teachers, is unhappy about the deal being imposed, particularly because it means teachers will lose negotiating rights. He is also unhappy about the lack of provision to cover for absent teachers for the first three days (Wakefield normally provides cover after one day). But his biggest criticism is the absence of provision for a minimum class size and guaranteed non-teaching time in primary schools.

Jeremy Sutcliffe

## East End Asian pupils still stalked by ghost of Mosley

Every war takes its toll of innocent victims. In Newham, the beleaguered borough on the fringe of London's East End, it is young Asians who are suffering as a consequence of the three-way battle between the authority, the Government and the teacher unions.

"War" is no light word to throw around but it is hard to think of a more appropriate term to describe the state of hostility which exists between the borough's large Asian population and the gangs of young fascist thugs who delight in tormenting them.

The torment takes varied forms - shouted abuse, attacks on youngsters coming from or going to school, the odd lighted cigarette through a door. The council does what it can. Like almost all authorities it encourages teachers to try to develop tolerance and understanding between different racial groups. But the East End has a long history of racial intolerance, exemplified pre-war by Sir Oswald Mosley and his Blackshirt movement and more recently by the National Front and the British National Party.

Mr Tony Chapman, head of Newham's Kensington primary school, estimates that 9 per cent of his pupils are Asian. And 75 per cent of them speak English as a second language, which means that they only use it at school.

And because of the pay dispute and a three-year-old disagreement between the teacher unions and the council over the provision of supply teachers, many of those pupils have found themselves at home when they should have been at school.

### NEWHAM

Only last week the National Association of Head Teachers advised its members in the area not to cover for teachers absent for more than one day and to send home children without a full-time teacher.

The NAHT action is retaliation for what it believes to be the council's failure to provide much-needed supply teachers.

There is an obvious need for supply staff because the local branch of the



Tony Chapman: fearful

National Union of Teachers will not allow its members to cover. On top of which, Newham is not an area that easily attracts teachers. Bad result - 16,000 pupils sent home during January.

Pupils sent home from Mr Chapman's school run a serious risk of being attacked by white youths, many of whom are loose on the streets because they have also been sent home from school. So bad is the situation, says Mr Chapman, that many Asian parents are now keeping their younger children off school for fear of attack.

But because most Asian parents go out to work they cannot look after the youngsters so the older, secondary school age, brothers or sisters, are kept at home to act as protectors.

It is a shocking, and depressing phenomenon, and Mr Chapman fears, it could get worse.

He is not too worried by the threat of half-day strike action now promised by the NUT and the NAS/UWT on the cynical, but no doubt justified, grounds that losing the odd afternoon's education is part of a Newham child's "way of life".

But he's scared silly that the action will escalate, that goodwill will be withdrawn and a bad situation will become a desperate one.

"We have teachers in Newham who after three years have no experience of preparing a report, attending a parents' meeting or taking part in curriculum development. If the dispute escalates the impact will be shattering."

Barry Hugill



Young Asian school children are fearful



James Meikle reports from the first of a series of conferences aimed at persuading firms to support teaching in shortage subjects

## Poor discipline threatens recruiting, says Rumbold

Lack of discipline in schools could undermine attempts to lure older people with mathematical, scientific or technical skills into teaching, Mrs Angela Rumbold, the Minister of State for Education, warned last week.

She told a conference examining ways of recruiting staff with shortage skills: "Teaching maths is very difficult and you need an attentive class of youngsters who want to learn."

Mrs Rumbold said later that reports of disruptive behaviour were probably exaggerated. But people who may have retired, been unemployed, or out of teaching for some years while raising families faced emotional tests in going back to work.

They should not find that they were

"turned off" by what they found in school.

Mrs Rumbold made the remarks as she visited a conference in Washington, Tyne and Wear, organized by the Sunderland Science and Technology Regional Organization, the first in a countrywide series asking companies to support teaching in shortage subjects.

She surprised some already doing such work because they felt the observations might merely confirm the views of industrialists reluctant to get involved until schools "sorted themselves out".

Mr Chris Marsden, BP's education officer, argued that industry had a responsibility to help, since indi-

pline was a social, not a school, problem. "If we can make life more interesting for kids, we may help."

Mrs Rumbold welcomed calls for a national register of all those people trained to teach to help find men and women who may give the profession a second try.

In 1984, an estimated 23,000 people under 60 qualified to teach maths were not in schools.

But the crisis would have to be on local authorities first to scour their own areas and then exchange information.

● The Manpower Services Commission and groups promoting school-industry links are considering a marketing campaign to involve more companies in education.

Business big and small would be told that developing such links was in the national economic interest and would help their own commercial prospects.

Involvement could help recruitment, give a firm added status, be popular with its own staff, many of whom were parents, and give vital experience and career development to employees through secondments, assistance with school projects, or other schemes.

Small local companies could also use skills of pupils and teachers in a range of activities from translation of business material in other languages to computer awareness.

The extension of the Technical and Vocational Education Initiative, which now includes every local authority except Kirkcaldy, has widened the need to provide practical work-related experience.

School-industry enthusiasts also believe that the drive to ease the shortage of teachers in scientific, technical and business studies offers far more companies a golden opportunity to open up schools to outside ideas.



Bits and pieces: science staff recruitment heavily criticized

## 'Pathetic' career structure

Recruitment and career development in teaching are "pathetic", according to a former industrial manager who is researching ways of improving the quality and quantity of applicants.

Mr John Prescott, who was manager of BP's North Sea gas terminal at Easington, impressed Mrs Angela Rumbold, when he told the conference: "I would only put a teacher into a first appointment for a maximum of three years. I would then move him because teachers have to have different experience."

The Government has just set up a national unit to join the university and college "milk round" and sing the praises of a career in teaching, and is introducing appraisal, although industrial action may slow its arrival.

But Mr Prescott's advocacy of more job mobility went down well with Mrs Rumbold. She commented later: "You

are right about recruitment. You are absolutely right about career development. That must be done."

Mr Prescott and Mr Brian Lowe, a seconded headteacher, have started an investigation, backed by BP and Huddersfield County Council, into possible improvements in local recruitment of teachers, particularly in shortage subjects.

Mr Prescott later made near-expected regular job changing with authorities rather than between parts of the country, although that would continue as some teachers deliberately looked for vacancies elsewhere.

He suggested that a teacher should hold a first post for no more than five years, including the probationary year, the second job for no more than five, and the third for no more than five, and first headship for no more than five years.

Mr Lowe is less keen on such an approach, although in favour of appraisal, pointing to school staff continuity and community.

Mr Prescott is excited by the idea of recruiting more young people in scientific, maths and technical teaching in schools. He says persuading volunteers who have just passed the local school, say for the first three years of the job, would be valuable educationally, to the company and to the person concerned.

## What is Prestel? A simple introduction

Prestel is the world's first public videotext service. It was invented by Sam Fedida in 1973 at British Telecom's research laboratories at Martlesham Heath in Suffolk.

Sam Fedida started his work by formulating ideas for the introduction of a mass information system using the existing telephone network. From this the concept of Prestel gradually evolved. With a team of four researchers, Fedida spent 18 months developing the system; examining how to produce the necessary software economically and very importantly, how to make the system very simple to use.

In 1974 the project team were ready to demonstrate a prototype working system. The full system was launched on a trial basis in 1979 and as a public service in 1980.

Prestel is now part of a British Telecom division known as British Telecom Enterprises. This division includes other well known services like Yellow Pages, Telecom Gold, Radiopaging and Cellular radio.

### The Service

Prestel is now used by tens of thousands of customers both in business and at home: large businesses, small firms, farmers, financial institutions, hotels, high street shops, banks, travel agents, schools, colleges and private homes. The information on Prestel is supplied both directly by Prestel, and by hundreds of independent organisations called Information Providers or IPs. These include public bodies such as the British Library, Central Office of Information and Health and Safety Executive, educational organisations such as the Council for Educational Technology (CET), Schools Curriculum Development Committee (SCDC) and the Department of Education and Science, major companies such as British Airways and ICI, and other well known names such as the Stock Exchange, Lloyd's of London, Time Out and the Consumers' Association. Some of the IPs offer specialist services for business

customers, such as CitiService, which provides information on stocks and shares, commodities and world money markets.

### Easy to Use

Customers find Prestel a quick and very simple way of getting the continuously updated information they need, and soon discover that it is a powerful two-way communications medium, that lets them send and request data, as well as just receive information.

Prestel is very easy to use. The information is organised into pages or frames, a screenful of information. To call up an item from the thousands available you simply press the numbers on the keyboard. No complicated codes are required.

Each page contains 24 lines of up to 40 characters, which makes them easy to read even on relatively poor quality low resolution display monitors. Pages can include simple graphics and up to seven colours, which helps make them look attractive and interesting.

### A Sophisticated Computer System

This simplicity should not fool you into believing that the technology behind the service is also simple. Far from it. It is a highly sophisticated technological system with a user interface deliberately designed for ease of use. Fedida was well aware of the needs of business and professional users who want to search for relevant information themselves, but do not have the time to contend with complicated controls and protocols. The information must be delivered rapidly, in the right form, at the right time, and to the right person.

The Prestel system consists of a network of computers linked together by high speed data links. In addition, multiplexors sited at local nodes across the country allow customers dialling the local node to obtain Prestel for the cost of a local phone call, without paying trunk call charges.

There are three types of computer centre operated by Prestel - Inform-

ation Retrieval Centres (IRCs), Update Centres (UDCs) and Message Centres (MCs). Currently the network consists of one UDC in London, linked to one MC and six IRCs spread over the country. Customers have access to two IRCs, to provide uninterrupted service in the event of temporary failure of one computer, network congestion or special maintenance demands. The system is available 24 hours a day every day of the year.

### A Gateway to other Systems

Prestel Gateway was introduced in March 1982. It is a facility which allows any conventional Prestel terminal to be

connected, via Prestel, to an external private computer. The link between the Prestel network and the external computer is provided by either a private data line, or through the packet switched service (PSS), British Telecom's public data network.

Gateway is a means of adding the more powerful features of many in-house computers to those offered by Prestel. Gateway is an extension of Prestel, introducing the potential for information retrieval and data processing on an increased scale, and for greater interaction with users.

There are currently over 50 external computers linked in to the Prestel

network. Of particular interest to educational users is the gateway to the Open University Sperry Univac mainframe computer, providing access to the ECCTIS courses guide and the NERIS resources information service. Other services using gateway include airline booking systems, direct on-line quotations from major insurance companies, and the HmLink and Bank of Scotland home banking services. Some gateway services provide very special business applications, and are restricted to certain customers only - such as airline booking systems restricted to ABTA registered travel agents only. Others are open to all Prestel customers.



Children at Furze Down school in Buckinghamshire log on regularly to Prestel. Norman Ward, headmaster of the school says that "Prestel is our lifeline to the outside world".



## A Business Experience

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## Tax angers language schools

by Ian Nash

British language schools are losing a fortune in export earnings to foreign competitors because of a tax anomaly, the largest UK organization representing their interests has claimed.

The 400-plus commercially-run schools attract 300,000 overseas students every year. But half of the schools are owned by groups based abroad and are exempt from the 15 per cent VAT imposed on home-based schools.

"They can therefore cut fees by as much as £30 a course," said Mrs Mayo, general secretary of Arels-Felco, the

association for recognized language teaching schools in Britain. Based here, they would also have to pay for stringent monitoring and inspection by the British Council.

"They can undercut us with unfair competition, while giving absolutely no guarantee of quality," said Mrs Mayo, who wants VAT abolished or the laws changed to bring all schools into line.

"We find it extraordinary that VAT is charged on educational services. It is also counter-productive for the long-term benefits of this country," But

repeated appeals to Customs and Excise and the Government have failed on deaf ears, she said.

More than 200,000 French students travel to the UK each year to take English courses but barely one-quarter are with Arels-Felco member schools. One small West London organization claims that it brings in recorded 750,000 students each year, 1985, and the 1986 figure is likely to be higher. But this represents only one over half the market.

## General Synod set to restrict governors' role

by Bert Lodge

The Church of England General Synod has taken a further step towards ending the traditional autonomy of church school governors that has been the envy of their: equity school colleagues.

Under a new measure a board of governors will have to seek the consent of its diocesan education committee before any change may be made in the status or character of a church school or in any alteration of the premises.

At present, the country's 44 committees are limited to an advisory role, and are frequently unable to influence governors, of whom two-thirds at voluntary-aided schools are nominated by the Church.

The Venerable Alan Chesters, the Archbishop of Halifax, said in proposing the measure that it would ensure that individual schools were in agreement of the I.C.S.

"They do not exist in isolation from each other, and they should not be allowed to be picked off one by one by a local education authority which is opposed to Church involvement," he said.

Though the measure was referred to a revision committee and still has some way to go, its progress will be welcomed by local authority administrators, whose dealings with church schools are complicated by the absence of a corporate voice.

The revision committee will consider limiting the composition of diocesan committees, from now on to be known as diocesan boards, to 25 members.

The governors of an aided school are responsible for conduct, curriculum and religious education. They also control admissions and the financial agreement of the I.C.S.

## Owen calls for pupils' voice

Dr David Owen, the leader of the Social Democratic Party, wants pupils to have a new ruling body for the school.

Pledging Alliance support for a general teaching council, Dr Owen said a lay membership of parents, pupils and industrialists should elect directly-elected teachers.

The council would be responsible for registering qualified teachers, regulating cases of professional misconduct, monitoring in-service training and advising on teacher pay.

Speaking at the London School Education last week, Dr Owen said the council would contribute to progress in schools.

Unions and other educationists have already agreed the formation of a council in England and Wales. Dr Owen said the council would be a new ruling body for the school.

## NERIS on Prestel

NERIS, the National Educational Resources Information Service, is now open to Prestel Education customers. The service is funded by the Department of Trade and Industry and was recently launched by the minister, Mr Geoffrey Patle.

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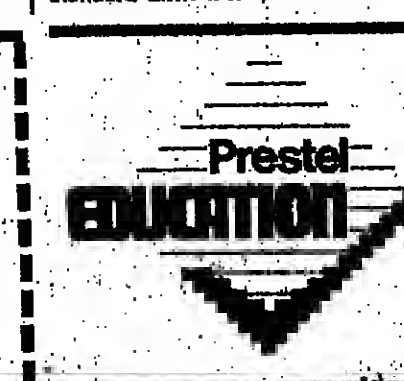
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The new tariff is only available to schools, teachers' centres and LEA advisers. Further and Higher Education colleges and other educational establishments will continue to be eligible for the standard education tariff of £80 a year plus 4p per minute time charge. Schools, teachers' centres and advisers may also remain on the standard tariff if they so wish.





Earlier this year it was being predicted — not for the first time — that the Inner London Education Authority was on the brink of financial disaster because of the Government's continuing refusal to give it a block grant. But last Friday the authority avoided the drop yet again by means of a dangerous budgetary juggling act. Barry Hugill explains how the feat was carried off

## Slipping the noose

The first task of any journalist assigned to write a "background piece" is to check the cuttings file. With luck the story will have been written several times before and much hard work can be avoided. Sure enough, the hulking ILEA file is a repository of fascinating information. For example... In what year was the authority in grave danger of having to discontinue its education provision because of the parsimony of central government? When did the authority last go cap in hand to the Education Secretary demanding more cash to prevent an almost total breakdown in the service?

The answer, of course, is 1982 and 3 and 4... and most recently last Monday. One wonders at times why it bothers. In the past six years London ratepayers have not received a penny in block grant, the cash that central government gives to local authorities to help pay for essential services.

The ILEA councillors annually put their case to the Education Secretary who listens politely before telling them that it is their fault, not his, that they are denied grant aid.

They don't get the money because year in, year out, they spend more than the Government says they ought. The more a local authority overspends on its government-imposed limits the more money it loses in grant. And, in the ILEA's case, the time came when the overspending was such that there was no grant at all.

It is a vicious circle. Because there is no Government grant the ILEA has to find all of the money from the rates to pay its teachers. As the largest education authority in the country it has the highest number of teachers and because of London allowances they come more expensive.

Other local authorities receive up to 47 per cent of the cost of education through block grant which, so the theory has it, leaves them with a sufficient amount of cash from rates to provide a reasonable level of education provision.

But the ILEA has such a large salaries bill that if it were to set what the Government considers a reasonable rate it reckons it would have very little left over to do all the other things that it wants to do.

And that is where its second major

problem arises. Not only has the Government taken away the authority's grant — it has put a cap on the amount of money it can raise through the rates.

This year, Mr Kenneth Baker has ordered, with the full force of the law behind him, that the authority must restrict its rate precept to 77.25p. And that means that if it continues to spend at its current rate there would be a shortfall of £102 million by this time next year.

There are a few people in the London Labour Party who believe that that belong the case, the authority should simply carry on as normal regardless of the shortfall. The problem with that approach is that it is illegal. Councillors cannot set a budget that they know they cannot afford. If they do, they can be fined and disqualified from office.

The last thing that Mr Kinock wanted in an election year was the ILEA doing a Liverpool mark 2 and last Friday its ruling Labour group voted to abide by the law and set a balanced budget within Mr Baker's precept maximum.

Does this mean then that Mrs Morrell and her colleagues have accepted Mr Baker's case that no harm would



come from some judicious pruning of the service? Of course it doesn't.

But neither does it mean that the much-publicised cuts that the ILEA said would be necessary if the Minister did not help them will take place.

There is a sense in which the ILEA leadership has for some years annually cried "wolf" only to announce later, usually on the eve of the budget meeting, that methods have been discovered of "preserving the service".

This year is no exception. Major cuts will be avoided by use of what the



Critics say that any benefits going to today's pupils are at the expense of tomorrow's

authority's finance officer, Mr David Riggs, calls "financing changes" — more usually referred to as creative accountancy.

Creative accountancy is not necessarily an evil although the Government frowns on it. There is some sympathy among local government finance experts, few of whom are politically on the Left, for the plight of many authorities who have had their central government grants cut.

In January the Audit Commission, a body not usually associated with radical ideology, produced a report which

sympathetic government would not allow the horrendous cuts to be imposed that will prove inevitable unless the Exchequer is prepared to restore the lost grant.

It is a gamble for two reasons. It is perfectly possible that Mrs Thatcher will be returned for a third term of office. But even were she to lose there is no guarantee that a Labour government, especially a minority one reliant on Alliance support, would bail the authority out.

It is true that Labour promises to end rate-capping and leave it up to local authorities to impose as a high a rate as they wanted. It is also true that it would scrap the penalty system that now results in the ILEA's loss of grant. It is open to doubt, however, that the level of grant that it would provide would be anything like enough to allow the authority to continue spending at its current rate.

The problem with creative accountancy is that by "saving" money this year you lose it next year, and the year after. Like all mortgage agreements, there is interest to be paid.

Thus by ruling, for example, the building fund the authority will lose some £800,000 a year in interest earnings. And the cost of "borrowing" £30 million this year is estimated to be about £10 million a year for a further four years after 1987/88.

Thus, in the long-run, creative accountancy not only depletes the amount of cash held in reserve by an authority, it adds extra costs that have to be met in subsequent budgets. Even leaving aside the impact of inflation it will in future years cost the ILEA considerably more each year just to stand still.

Critics of the ILEA in the Conservative and Alliance parties, and some within the Labour Party, say that it is dishonest to pretend to be defending the interests of pupils when you know full well that in the not-too-distant future the money will effectively run out. Any benefits going to today's pupils are at the expense of tomorrow's, they argue.

There are important disagreements between Tories, Alliance supporters and Labour right-wingers over the number, and nature, of the cuts that

could be made.

At the risk of over-simplification, the Tories are critical of the whole directorate of ILEA policy. They believe there are too many teachers, that County Hall is too heavy with administrators, that too much time, money and effort goes into the authority's famed initiatives on race, class and gender.

The Alliance and the Labour Right are, on the whole, sympathetic to the attempts to improve the educational opportunities of ethnic minority pupils and girls. They believe that the Leavers Report on secondary schools, the Fish Report on special education and the Thomas Report on primary provision are important and sensible documents that point the authority in the right direction.

But they share the Tories' view that the inner London teacher unions are too powerful a hold over the authority. And they argue that if costs are to be brought under control, the ILEA must more effectively manage its teaching force.

They want compulsory redeployment of teachers and the authority has now decided that that is what they will get. But Alliance members of the ILEA are sceptical that it will happen.

It is undoubtedly true that for years the authority has avoided a fight with the unions, despite mounting evidence that there is serious understaffing in some schools and special serious shortages in others. The ILEA policy that teachers should provide one-day cover for absent colleagues, many refuse to cover at all. Yet the ILEA has consistently refused to take disciplinary action against them, arguing that it is a problem for the unions, primarily the National Union of Teachers, rather than the authority.

Opposition politicians are sceptical about Labour's intention to make cuts because, they say, economy measures that will bite next year have to be implemented this year.

This is a point taken up by David Riggs in a briefing paper produced last week's budget meeting. Planning for an academic year takes place a long way in advance, he explained. Because the authority had made offers to pupils and students about courses for the year starting in September it would be difficult to introduce cuts now. He said: "And it is a point that Douglas Brennan, the young SDP leader on the ILEA, is now making. If the authority is serious about managing its resources it has to start making difficult decisions now, not on the eve of next year's budget; he says."

To which the Labour leadership replies that that is exactly what they are doing, pointing to the plan for compulsory redeployment of teachers. The evidence of the cuttings file is that such statements have been made many times before. Perhaps the only difference is that now the cuts are for real.

Geraldine Hackett reports on a dilemma facing the DES over its Aids booklet for schools — published last Friday

## Change to chastity is the Church's message

Children in Catholic schools may not get the full message about the means of preventing the spread of Aids as spelled out in the booklet from the Department of Education and Science.

The Catholic Schools Service says the information on condoms and their use as set out in the booklet was not likely to be used in Catholic schools. Responsibility for the content of lessons such as sex education rests with the governors of state-aided church schools.

Mr Mike Power, deputy secretary for the Catholic Schools Service said: "I have not had time to study the content of the Aids booklet, but on first reading I think it unlikely that parts of it will be used by teachers."

"Sex education in Catholic schools has to be spelled out in terms of the sacramental nature of matrimony. Sexual intercourse is a key part of marriage."

In some Catholic schools, the information may not even get to teachers. Monsignor Nicholas Coote, assistant secretary of the Bishops' Conference, said it was possible some heads would dump the leaflet in the wastepaper basket.

"I haven't read it, but we would expect the subject of Aids to be handled in accordance with the Church's teaching. The Church doesn't approve of contraception."

The Church would say that the way to check the spread of Aids is through advocating chastity and monogamous marriage, and when we are talking about changing people's behaviour it may be that what we should be advocating is chastity and not encouraging a change in behaviour in the use of condoms."

The comments came in the wake of last Friday's publication of the DES

**The way to check the spread of the disease is through advocating monogamous marriage**

MGR NICHOLAS COOTE

booklet about Aids, which officials hope will be used by schools throughout the country.

The DES's dilemma stems from a clause in the 1986 Education Act which gives governors the right to decide on the content of sex education lessons in schools. County school governors could, therefore, follow the Catholics' example.

In a recent statement in the House of Commons, Mrs Angela Rumbold, the Minister of State for Education, agreed with MPs that governing bodies would be able to dictate what was taught in sex education lessons. However, the DES argues that the topic of Aids could be considered as basic health education — rather than sex education.

The booklet, *Some Questions and Answers*, is available from the DES Publications Despatch Centre, Honeypot Lane, Stanmore, Middlesex HA7 7AZ. It also suggests there is a risk from oral sex. The leaflet says condoms provide a degree of protection against the infection.

There are thought to be some 200 schoolchildren infected with the Aids virus and three known cases of the full-blown disease in schoolchildren. Schools have been told they should not take blood or cell samples for science demonstrations.

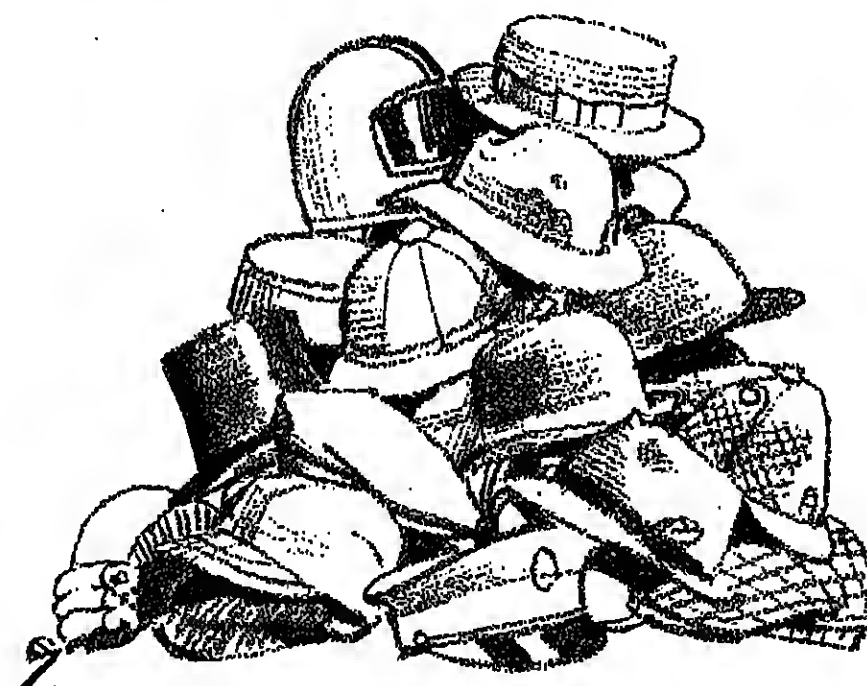
One million copies of the leaflet have been printed for distribution to schools, colleges and youth clubs.

*Aids: Some Questions and Answers* is available from the DES Publications Despatch Centre, Honeypot Lane, Stanmore, Middlesex HA7 7AZ.



Fun with numbers: pupils from Firs special school in Smethwick took part in the Sandwell maths fair along with more than 70 of the borough's primary, secondary and special schools. The fair at Churchbridge teachers' centre encouraged schools to share and enjoy mathematical ideas and activities across the curriculum.

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David Riggs reporting in creative



Dominic Brennan's difficult decisions



## SCHOOL TO WORK

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## University of the Air in search of updraught

### JAPAN

Barbara Casasus tunes in to the broadcast education system

Japan's University of the Air, now approaching its third year of operation, is not the resounding success the authorities had hoped.

Only 2,300 undergraduate students enrolled in the country's equivalent of Britain's Open University last April, about 8,000 fewer than for the first 12 months, and prospects are not much brighter for this April's intake.

One of the problems is that the courses are only available within a 20-mile radius of Tokyo, where many other study opportunities exist. Other likely reasons for the poor response, according to some observers, is that the university is not promoted enough, even though demand is growing in Osaka and the southern island of Kyushu for courses to be made available there.

This spring, the network will be enlarged slightly, adding a cable TV link and a study centre in Tokyo's neighbouring Nagano prefecture (county).

For the moment, there are six study centres, where full-time four-year bachelor of arts students must undergo two hours a week of classroom instruction to supplement four hours of television and radio broadcasts and five hours of study. Admissions have exceeded the quota to accommodate as many applicants as possible.

The liberal arts department, the university's only faculty, offers courses in life sciences, industrial and social studies, and humanities and natural sciences. Students may enrol for a year, a term or for as long as it takes to earn enough credits to begin a degree course.

This year, 17,000 students were enrolled, with almost equal numbers of men and women. The oldest is a man of 84. Among degree students, men outnumber women among the under-35s, whereas the opposite applies to the 35-55 age group. Most are office workers or bank clerks. The unemployed, housewives, civil servants and small business owners are also well represented.

Enrolment fees range from 3,000 to 15,000 yen (£12-£60) and tuition costs up to 93,000 yen (approximately £390) a year for full-time courses, much less



Most students are office workers or bank clerks

than regular universities. The annual budget stands at nearly 7.7 billion yen (£32 million), of which the Government provides more than 40 per cent. The teaching staff now totals 269, of whom 72 are full-time, and those figures are set to increase to 303 and 78, respectively, by 1988. The number of subjects taught is also expanding, from the original 105 to 238 this April and to 270 next year.

The university took 15 years to fruition. Opposition in and outside the Diet (Parliament) to its establishment was strong and enabling legislation was thrown out by MLC twice.

It is still criticized on several counts. Although run by the university's autonomous foundation, it is accused of being a vehicle for Government propaganda.

Members of its administrative council are appointed by the Education Ministry and, opponents point out, its economic syllabus ignores Marx theory completely. Furthermore, the University of the Air degree will lead to promotion or a new career because of the seniority system and Japanese employers' preference for recruiting young graduates, they said. How rapidly the university will spread its coverage to become an important part of the higher education system will depend on a large extent on Government finances.

A committee has been formed to draw up a second plan from 1988, while the aim is to increase the number of universities with which it can transfer agreements from the present five private institutions.

## Reagan postpones the great asbestos clean-up

### UNITED STATES

When Congress earmarked \$50 million (£33.3 million) last year to tackle the asbestos problem in American schools during 1987, many administrators heaved a sigh of relief. Help was on the way at last.

But they rejoiced too soon. The money has not yet been paid out, and now the Reagan Administration is trying to claw back all but \$2.5 million. An estimated 31,000 American schools serving about 15 million children, need to remove asbestos, which can cause cancer if inhaled.

There was indignation on Capitol Hill last week when the Administration's decision was announced. Mr. Frank Lautenberg, co-sponsor of the Asbestos School Hazard Abatement Act, which designated a total of \$500 million for the work over a number of years, denounced Mr. Reagan for "insensitivity" in trying to balance his budget on the backs of schoolchildren. Another Democratic Congressman, Mr. Thomas Luken, accused the Administration of "sabotaging the law".

The withholding of funds needs

most unlikely to get. However, because of the timing of the move, the savings are likely to be made. The Environmental Protection Agency, which was to have begun distributing the money early this year, is now retaining the funds until the issue is settled in Congress.

Win or lose, the money can only be made available by early summer, and only for those schools which applied last year. There is an eight-month bureaucratic delay between applying for an EPA grant and receiving it, even without political intervention.

Schools will be unable to make plans for asbestos removal during their summer break, which is the only time when the work can be done because of the danger to children from the dust. With the exception of those schools which can afford to go ahead without federal help, it now seems that the great asbestos clean-up will have to wait until 1988 at the earliest.

Even that date is in doubt, for there is nothing to prevent the Reagan Administration, which believes that this is a local problem for which there should be no federal funding, from employing the same tactic next year.

## Israel faces new austerity measures

Israel is planning huge cuts in next year's education budget which threaten a drastic reduction in standards.

Even President Chaim Herzog, who addressed the National Parents Association convention in Jerusalem, warned that the education system was in danger. But he stated that his political stand on the issue.

Cuts of 44 million shekels (£13 million) have been imposed on the Education Ministry by the Treasury. The austerity plan to deal with the current budgetary crisis includes:

- firing 5,500, mainly elementary teachers
- closing 146 schools serving 100,000 children and transferring them to other schools
- reducing hours of learning by 10 per cent
- by one-and-a-half hours a week

Meanwhile, the Education Ministry is seeking a supplementary budget of 100 million shekels to improve Arab schools. Funds will be allocated to build new classrooms as well as to improve existing ones.

## Undecided over ultimate Abitur

### WEST GERMANY

The Left and Right are wrangling about the eventual form of the A level equivalent, reports Paul Bandalow

The West German principle of nationwide validity for school-leaving qualifications is in doubt following the revised failure last month of regional educational ministers to agree on the future form of the Abitur, the A level equivalent.

The issue at the forefront of the debate is how traditional the exam can remain while still meeting the needs of a rapidly changing working world, and the extent to which vocational elements can be introduced into sixth-form syllabuses without sacrificing academic standards.

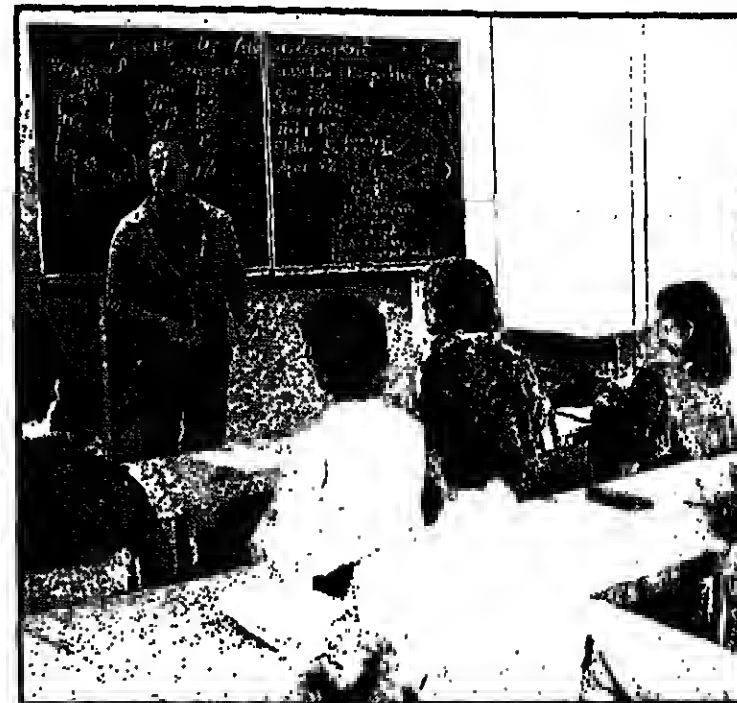
The handling conference of regional education ministers, the KMK, met to hammer out a compromise between the Conservative CDU-governed states, which favour a return to a more classically academic Abitur as a general foundation for university specialization, and the Socialist SPD areas, which believe a broader, more flexible exam would better prepare most sixth-formers for their future careers.

The CDU position, put forward at the conference by Baden-Württemberg's Education Minister, Herr Gerhard Mayer-Vorfelder, seeks to restrict subject choice, reintroduce compulsory topics such as German or maths, and so give the Abitur more of the nationally uniform character it had before the sweeping reforms of 1972.

The SPD view, advocated by North Rhine-Westphalia's minister, Herr Hans Schwier, is that the strict division between "head and hand" in West German education must be broken down with the help of school-leaving qualifications flexible enough to cover a variety of career directions.

The debate has revived controversy over new approaches to school-leaving qualifications, such as that of North Rhine-Westphalia's *Kollegschule* experiment, which allows sixth-formers to acquire a "double qualification" - a combination of Abitur and apprenticeship - which gives access to both higher education and a profession.

In an interim compromise reached last April, the Conservative states



Sixth-form examists no longer a one-way street

agreed to recognize the *Kollegschule* Abitur, while maintaining serious reservations about its educational standards. That recognition is now once again at stake, with the CDU demanding that an extra year be added to the sixth-form course to avoid the danger of what they describe as a "discount" qualification.

North Rhine-Westphalia has signalled that it is not open to blackmail on the *Kollegschule* issue, and if necessary will forgo national recognition of the new qualification rather than renounce attempts to open up the Abitur.

A failure to agree on the make-up of the exam could limit school-leavers' choices of higher education or career to those available in their own state. Frau Dorothee Wilms, the Federal Educational Minister, warned last month that, if comparable standards could not be secured among the regional states for sixth-form syllabuses and qualifications, the universities could not be blamed for introducing their own admission examinations to establish the educational level of applicants.

On a broader level, the present row

reflects widespread concern about the future role of the *Gymnasium* (grammar school) and the function of the Abitur. According to Herr Dieter Wunder, chairman of the country's largest teacher union, the GEW, the *Gymnasium* is facing a reform of similar magnitude to that at the beginning of the century when the Latin grammar school had to open its curriculum to the natural sciences.

Today's new challenge, he believes, is for the *Gymnasium* to incorporate elements of vocational training and for these to be reflected in the Abitur. Herr Wunder points out that nearly half of grammar-school leavers with the Abitur are now opting for vocational training courses rather than going straight to university.

This is the equivalent, he claims, of going through the sixth form twice - once at the *Gymnasium* and once at a vocational school or college - and represents an unacceptably long transition from school to career, especially if students later go on to degree courses.

The changing role of the Abitur was highlighted in January in a report

published by the HIS university information service. This claims that sixth-formers are now overwhelmingly concerned to make a good career start after leaving school, rather than to join the "graduate class" as they would have done 20 years ago.

The Abitur, the study says, is no longer a one-way street to higher education, but more of a "traffic island" with exits leading in different directions.

This reflects both the growing proportion of school-leavers with the Abitur - from roughly 5 per cent 25 years ago to 22 per cent last year - and an awareness of widespread graduate unemployment, which is likely to worsen in the next decade. The number of graduates will increase by 2.8 million by the end of the century, but only 800,000 existing graduate jobs will become vacant through retirement.

A further demographic trend underlying the Abitur debate is the drastic fall in school rolls. In North Rhine-Westphalia, the most populous state, the school population fell from 3.4 million in 1975 to 2.7 million in 1985, giving rise to fears for the survival of the tripartite structure of secondary education - grammar, comprehensive and technical schools - and with it the continued existence of the *Gymnasium*.

In the growing competition for a dwindling number of pupils, advocates of the *Gymnasium* see comprehensive, and especially experiments of the *Kollegschule* type, as a threat.

The degree to which popular feeling on this issue can be mobilized was demonstrated by a petition in support of the tripartite system, organized in North Rhine-Westphalia during the run-up to January's general election. It collected 1.3 million signatures, even though the state's 82 comprehensive schools are massively outnumbered by 650 grammar schools.

In February's unsuccessful meeting of the KMK, Baden-Württemberg's Herr Mayer-Vorfelder, said that "the German Abitur is a seal of quality" and must be preserved as such. In response, North Rhine-Westphalia's Herr Schwier warned against declaring something to be of lower quality simply because it is beyond one's own experience. The KMK meets again in April in a further bid to reconcile arguments which in fact are not only about quality, but quantity as well.

## Promise of a future for history

### ZAMBIA

The declining popularity of history in the face of the growing popularity of science subjects among secondary school pupils is worrying Zambia's history inspector from the Ministry of General Education and Culture in Lusaka.

Mr V M Tembo, the inspector, has sent out a fervent appeal to school heads to impress on pupils the advantages of taking the subject.

"Very few pupils make it in the sciences. So why not give them a broad base that can assist them in various subjects?"

"I know that history study involves much reading. This is good and it is part of intellectual discipline. History learning also involves collection of material, classification, analysis and forming conclusions. All this is important."

The circular adds: "It is nearly impossible even today to plan for our economy without a sound knowledge of history. I therefore appeal to you to encourage your pupils to offer this foundation subject."

A detailed listing of course requirements for various degrees at the University of Zambia is also given in the document to show the relevance of history for those wishing to follow degree courses such as law, social work, public administration and education.

Mr Tembo lists "an overwhelming number of occupations and jobs that require a knowledge of history", including researcher, archivist, journalist, dramatist, evangelist, magistrate, politician, educationist, economist, radio announcer and police officer.

The history syllabus for the Zambia School Certificate includes both African and European history and the percentage of passes in the subject has consistently been below that in most other subjects.

Pupils wishing to obtain a Grade 1 pass (over 75 per cent) in a subject have little or no chance of doing so in history. This is one reason why many candidates opt out of history in favour of subjects where a better mark is likely.

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The pupils have to be encouraged to be aware of their handicap - to be open about it and not ashamed," Mr Moeller says. "They must be given confidence to overcome their limitations, through self-realization and the development of their own potential and skills. There is nothing stupid about being word-blind."

The special courses for dyslexic teenagers, which last between two and three years, include ordinary curriculum subjects. They are kept deliberately short to prevent pupils becoming bored from the outside world. Many lead a wide range of lives in a wide range of activities. The written word is less important, such as dentistry and painting.

Christopher Follatt

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## LETTERS

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## The dangers in remaining deaf to the value of music

Sir - Kenneth Clarke's unfavourable estimation of the Scottish music teacher compared with the southern mathematics teacher (*TES*, February 20), shows not only an inaccurate knowledge of detail and a lack of foresight in respect of the consequences of regional differentiation, but perhaps even more disturbingly, reveals his thinking regarding the establishment of a subject hierarchy too.

Your commentators pointed out their concerns over regional differentiation in levels of pay and the consequential intensification of the north-south divide, but passed over the subject consideration. Note that Mr Clarke was not comparing northern and southern maths teachers, but music with maths. Clearly regional differences were not the only criteria upon which individuals doing similar jobs might be paid at different rates.

It would be interesting to speculate what other criteria Mr Clarke might have in mind for paying people at different rates. But having said other issues, the effect of such a scheme would be to have teachers in the same school earning different rates of pay.

How could such a system work? Who would decide on the subject hierarchy? It would be easy in today's technological climate to see maths and science at the head of the league table and music at the bottom. But what about all the other subjects studied in school?

What price French, or history or physical education, not to mention religious education, home economics, pottery or pastoral care? Who could ever imagine the possibility of qualitative assessment of their relative worth? And, of course, to whom or what would we be relating this value?

The question of value must be at the root of Mr Clarke's thinking, rather

than the amount of work which teachers do in different subjects. I would imagine that in most schools the music teacher is one of the most hard-pressed, under-valued and over-worked members of staff, taking into account the emphasis on training for jobs rather than on broad education, and allowing for the many hours of extra-curricular work that music teachers put in.

So, if the factors concerned in the assessment of value do not take into account teaching time, preparation time, extra-curricular involvement, personal stress, students' progress and so on, which they cannot if differentiation is to be counted in purely subject terms, then it is clear that such a judgement must then be made on simple personal prejudice.

The notion of paying someone more money than another person doing the same job, just because he chooses to live in a more expensive house, pales against the irrationality of paying someone less, because they have to work harder doing a less popular job.

I wonder if Mr Clarke can visualize the consequences of such action in the long term. Does he ever enjoy the theatre, or the art gallery or a symphony concert?

If he aware that there are now many children passing through our education system who never experience the delights that music and the other arts can offer? Can he see that a consequence of this action might well have a deleterious effect on the quality of all our lives in the future?

The effects of paying music teachers (or any other subject for that matter) less than their colleagues in schools would be to diminish further the quality of music to the state schools. Ironically, our great "public" schools, from which many of Mr Clarke's



Music offers society far more in terms of enjoyment than maths ever can

nonourable friends come, have long cherished their musical prowess. It seems that in the private sector, the offering of facilities and resources in the arts does little to hinder intellectual success in the form of entry to university, indeed music is often seen as a positive bonus.

Yet in the state schools, music and the other arts have to take a back seat for fear of holding students back in their development. How sad if music were to become the sole prerogative of the independent school; no wild supposition if Mr Clarke's ideas were to become fact. Nearly 95 per cent of our population would be prevented from receiving a musical education with the consequential demise of bands, choirs, orchestras and so on.

This is the very antithesis of what our present society needs. With escalating unemployment, early retirement, short-time working and the like, the need for individuals to be able to use their leisure time constructively has never been so great. Music, point-

ing, sculpting, pottery, dance, sport, games and crafts are ancient legacies for society and this is no time to questioning their existence.

Paying teachers of mathematics more money will improve the quality of prospective maths teachers, but I cannot increase the number of plain students at university nor increase the number of jobs available. But my experience in music and the arts can provide the basis of a skill and source of employment for the rest of an individual's life.

From a utilitarian standpoint there can be little doubt that music and the arts can offer society as a whole more in terms of the greatest enjoyment for the greatest number than any other subject. This is not to denigrate the importance of mathematics, but rather to point out the impossibility of setting up any subject hierarchy on any logical basis.

D PERKINS  
Lecturer in music and education  
Portsmouth Polytechnic

## Damning streams

Sir - When Tom Hestie fails to realize (*TES*, February 27), is that advocating the abolition (or modification) of streaming and other forms of inner school segregation does not in any sense imply a belief that "our pupils are all the same, are all equal", or any other such nonsensical statements.

It seems odd to have to put the case against streaming again, in the late 1980s. But the act of streaming implies that a whole group of pupils can be regarded as "the same" - the teaching pitched at "their level", and so on. The act of streaming, as most primary schools know very well from their own experience, creates a situation where

individual talents and qualities are left to emerge and find expression in a way that was impossible with predetermined streaming.

It is far from clear that Tom Hestie has read the pamphlet he attacks for criticisms are misdirected and the work of the work. The authors of *Defining Comprehensive Schools* do not agree with Gramsci's precept about education; nor is there any indication in the pamphlet that a rigorous approach to learning is not a fundamental requirement while comprehensive, or any other type of school.

BRIAN SIMON  
Emeritus Professor of Education  
University of Leicester  
11 Pendene Road  
Leicester

## Heads' merger

Sir - I note from your issue of February 27 the reasons given by the Secondary Heads Association for calling off the talks that were taking place with the National Association of Head Teachers on the subject of a possible merger of the two organizations.

It is not for me to comment on whether there is little grass-roots support for such a merger within the ranks of SHA, but it is certainly appropriate that I should write and reject the statements made by SHA about our organization "being dominated by the concerns and demands of the primary sector".

I appreciate that SHA has been running this theme for some years now as part of its recruitment campaign and I suppose that if one repeats an incorrect statement frequently enough it will be believed by the recipients of the message.

The fact is, however, that the NAHT not only represents several thousand heads and deputies in secondary schools, but also devotes a great deal of time to the needs of those members, just as it does to other sectors such as primary and special

Nobody who has read the NAHT publications and knows of the work done by our Secondary Advisory Committee, our branches, and by our members, would recognize the suggestion in terms which SHA would obviously like people to believe.

The NAHT regrets the decision of SHA to call off the discussion, because we are convinced that thousands of heads and deputies would like to see one association representing them all in the years to come. There can be no advantage in following the example of the rest of the profession whose disunity has weakened considerably.

The late 1980s and the 1990s are for an association to speak and represent the senior members of the profession, who will have an increasing and onerous responsibility to look after in the year to come.

DAVID HART  
General Secretary  
National Association of Head Teachers  
Holly House  
6 Paddock Hall Road  
Widmore, Gloucestershire GL8 3JF  
West Sussex

## LETTERS

## Revise maths A level but don't 're-invent the wheel'

Sir - Were other mathematics teachers as taken back as I was at some of the suggestions made by Chris Waddington (*TES*, February 20)? Do we really emphasize the learning of techniques for their own sake? Do we really prepare solutions to problems in advance? If that is Chris Waddington's experience of A level mathematics teaching, I am not surprised that he sees the need for a change in methods.

I am sure, though, that the pattern he describes is not general. Do not many teachers introduce each new technique as a response to a perceived mathematical need? Are there not teachers who develop mathematical theory by asking their students for suggestions, which need to be evalu-

ated and discussed immediately? Surely most teachers work through problems with their students rather than preselecting them with perfect, prepared solutions?

That is not to say there is no need for the revision of A level mathematics syllabuses. The reduced content in GCSE gives one reason. The observation by Professor Geoffrey Howson that mathematics is more difficult than other A level subjects suggests another one. Each of these implies a reduced syllabus and here I am in agreement with Chris Waddington.

Nevertheless I question the desirability and necessity of introducing compulsory investigations and teacher

involvement in assessment as in GCSE.

A level is not the same as GCSE: It takes place in the post-compulsory phase of education and is taught to those who have chosen to study it. Rather than failing to inspire students if we do not adopt an investigative approach, the danger is that we shall frustrate the academic students who are eager to acquire more knowledge and understanding if we make them spend too much time re-inventing the wheel.

DR J S THORNTON  
The Tertiary College  
Blispham Road  
Fareham  
Hampshire

## Grade boundaries

Sir - I am glad that Mr Toubkin takes the trouble to study the statistical information which the Joint Matriculation Board provides in its examiners' reports (*TES*, February 27). It is, however, a little naive to suggest that a board which goes out of its way to publish such information for the benefit of teachers would fail to ensure that its own examiners take it into account in making awards.

The paper, which is common to most of the JMB A level mathematics syllabuses (P), is used as an indication of the standards of performance of the groups of candidates offering the different syllabuses. It would, nevertheless, be very unfair to use it to equate awards to some mechanical way.

The particular problem of pure mathematics with statistics certainly has not "dearly completely escaped the attention of the examiners" as Mr Toubkin asserts. The relationship of pure mathematics with statistics with the other A level mathematics syllabuses is a matter of earnest debate by the examiners every year and 1986 was no exception.

Candidates who take PMS are, on the whole, not among the most gifted mathematicians and their prime interest is often with the statistics paper, in which on average they score much higher marks. What the examiners have to do is to strike a balance between the relatively weak average performance on paper 1 (compared with, for instance, those who take it as part of pure and applied mathematics) and the higher average performance on paper 2 (statistics).

Where the appropriate grade boundaries are to be set is a matter of judgement and it is taken by the chief



Setting standards for A level maths

examiners to full awareness of the boundaries being established in the other syllabuses.

Our post-examination analyses, and particularly the subject pairs analyses, which we carry out as a way of comparing standards in different subjects, show that the standard of awards in our various mathematics syllabuses is very closely in line.

COLIN VICKERMAN  
Joint Matriculation Board  
Manchester

## FE micro plea

Sir - The article on the HMI survey of the work of the Micro-electronics Education Programme (*TES*, February 27), omitted a major example of the braking action of the DES, I refer to the complete lack of help given to the further education service by MEP as a result of inadequate funding of this modest initiative.

When the programme was announced in the House of Commons in March, 1984, by Mr Macfarlane, he said: "The programme will give schools and colleges a better understanding of the potential applications

of microelectronics technology by commissioning new development projects and building on existing work in this field."

In fact, MEP was focused on the work of the schools and Mr Potbergill, the director of MEP, told me that the decision to do this was taken early because the allocation of resources was insufficient to do otherwise. Furthermore, he anticipated that FE would eventually gain by "making use of schools' materials".

This, in fact, did not happen. A survey carried out by the Further Education Unit in 1984 showed that more than 1,000 items of software developed by MEP only some 50 or so

were of interest to FE. Other FEU surveys drew attention to the acute shortage of suitable didactic software.

This is yet another example of the lack of understanding on the part of ministers and officials at the DES of the need of the FE service to have, at all levels of work, adequate resources for equipment and materials to meet the challenge of rapidly developing technologies.

L K STREET  
General Secretary  
Association of Principals of Colleges  
38 Highland Road  
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CLASSROOM RELATIONSHIPS  
**Growing together**

Anne Krisman

In the past, it had always seemed to me that being a youth worker knocked spots off being a teacher. It stood to reason; you worked with children who wanted to be there, you could develop informal relationships with them and there were no oppressive structures to hold you back.

It also seemed attractive to be called "Anne" instead of "Miss" (or "Mum", as the first years tended to do, absent-mindedly). For a somewhat dependent teacher, youth work was the ideal.

Or rather, that's what I thought before I tried it. Admittedly, it was only a night a week in the local youth club, yet it was enough to give me a taste of the act-up I had yearned for.

My first shock was that youth clubs had assemblies. Ours was called "Chummy Time", although it was, to all intents, an assembly where our youth leader told the children what was going on in the club. There was strict control. "If you speak, I'm prepared to send one of you home and make an example of you," he belted.

When it came down to it, the informal relationships I had been looking for seemed to be very superficial. The youth workers were there to provide table-tennis bats and to facilitate a good evening's entertainment.

There were children who were bappy to sit and talk to us, but it was rarely reflective. They were there to enjoy themselves and to meet friends.

The free atmosphere meant freedom of speech and I found myself listening to unsavoury sexist comments

by the boys about the girls. The experience of being in a youth club was surprisingly draining. I felt like I did when I was a probationary teacher: unsure of my role and responsibilities and worrying if the noise level was getting too high or not.

My limited experience of youth work gave me fresh insight into life at school. It's clear that there are two elements of the school day: time-tabled lessons and everything that happens out of those confines.

There are the breaktime visits from pupils who want to tell you about *EndEnders*, children who bring in pop-star posters for their wall display, warm greetings in Punjabi in the corridor.

There is the sense of a narrative of relationships; seeing children progress and grow and understanding their behaviour in the context of what you know about them.

Why is it that school relationships seem deeper than those in an informal set-up? I have found that there are two sides to this. First, the seemingly oppressive structure seems to produce shared understandings between teacher and taught. We are similarly bound into the school structure and look for ways of getting through the day. Our position may not be equal but for most of us, we are there because we have to be.

And second, despite ecological studies that describe pupils as "open war" with teachers, there is something special about the relationships that grow from working together. Of course, there are always children in our working-class comprehensive who are prepared to take teachers on. Yet there are many who have respect for anyone who treats them properly and teaches well.

Lesley, a fourth year said: "One thing I can't stand is teachers who don't explain the work to you." I am sure that every teacher has an example of a difficult pupil who works for them alone and produces wonders - a relationship that has grown from a mixture of work, respect and trust.

There is more to relationships with young people than being called by your first name. Youth clubs do not have a monopoly on knowing young people as individuals. Let us stand back and take a detached look at the positive side of being a teacher. We may not have table-tennis bats, disco music or coffee bars, but we do have something more valuable.

Anne Krisman teaches in London.



TALKBACK



SALVAGE  
**Totting up**

Maureen Scratchard

In posh areas, they are called rag and bone men; here we call them "totters" the people who go all around the district looking for anything unwanted that might be useful. They come to mind particularly as I assemble my various plastic bin bags ready to start school at the end of my week's holiday.

I'm feeling rather pleased with what I've managed to scavenge. Hundreds of cardboard tubes, yoghurt pots, cardboard boxes, all dutifully collected for me by my neighbours. Lengths of yarn, all shades, rescued by my husband from the local carpet works. Offcuts of card and shiny paper begged from the long suffering manager of a greetings card manufacturer, who is besieged daily by local teachers. I could go on, but the list would be all too familiar to primary school teachers everywhere.

What a nuisance we teachers have become, continually begging and pestering people going about their daily lives. Why do they put up with us? I'm sure if my solicitor went asking for free paper on which to do his office work, he'd get an unprintable answer. Quite right too. Yet, not once has anyone told me to push off. They take it for granted that "totting" is part of a teacher's job.

It's become like an acquired occupational disease that I can't rid myself of. Only yesterday I met an unsuspecting man who told me he was a joiner by trade. Really! Have you any offcuts I could have? I replied. You must be a teacher, he sighed. Well yes, how did you know?

Maureen Scratchard is a teacher at Littleworth Infant School, Bormsley.

THOUGHTS INSPIRED BY PHASES II AND III, or  
**Emotion recollected in sterility**

Rosemary Booth

*I had this urge to enlarge on  
The current pandemic of jargon  
Rephrasing what anyone knows  
In sufficiently turgid a prose  
Is enough to create an impression  
Of fluent and facile expression:  
It can't matter a snippet of thread  
That nobody knows what was said,  
Nor is it especially cheering  
To suspect it wasn't worth hearing.  
It is no very difficult thing  
To become a Pierian Spring  
To spout from the mouth such a flood  
Of "in-words", all lucid as mud.  
Jargoneers' brains must be plastic,  
They use words as knicker-elastic  
Which adapts to all contours and sizes  
And covers whatever arises.  
Jargoneers never talk . . . they all verbalize,  
They don't mow the lawn, they deherbalize.  
Their facts are not facts . . . they're data,  
Kept in banks . . . vice computer-pater.  
Jargoneers never drink, they must socialize,  
To imagine is always to empathize.  
They don't teach, they inculcate skills,  
(Which sounds like suppositing pills)  
Don't tick, positively reinforce work  
And prep is commuted to "coursework".  
We're on a course getting wearier  
While they obfuscate on criteria.  
While the kids go untought, we go spare  
And listen for what isn't there.  
However, one thing'll stay just the same,  
When this fops, we'll get the blame . . .*

not  
the jargoneers.  
They'll  
weaselword their  
way out  
of  
all responsibility  
for  
anything . . .

Rosemary Booth is head of history at Guernsey Ladies College.

UNIVERSITY OF NEWCASTLE UPON TYNE  
**OPEN DAY**  
for Heads of Sixth Form  
and Careers Teachers  
**FRIDAY, 10 JULY 1987**  
**REDBRICK REVISITED**

As a follow-up to the recent series on Channel 4, the University of Newcastle upon Tyne is holding an Open Day on 10 July. It will be of particular interest to Sixth Form Careers Advisers and Careers Officers.

Accommodation is available at special rates for visitors from a distance.

For details, please contact:  
Dr. John B. O'Donovan, Assistant Registrar, 6 Kensington Terrace, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU. (081) 232 8551.

**SCHOOL TEACHERS' PROVIDENT SOCIETY**  
THE SIXTY-SECOND ANNUAL GENERAL MEETING  
of the SCHOOL TEACHERS' PROVIDENT SOCIETY will be held in the Pavilion Theatre, Bournemouth, on Wednesday, 22nd April 1987, at 5.30 p.m.

A. J. MOSE  
Non-Managing Secretary  
Camelot, 8 Elmfield Road,  
Liverpool, L16 8AZ.

CAREERS IN CAREERS  
**Hope is a distant memory**

David Fleming

paper headlines about dole figures and anpling legislation aimed at making life and making life more difficult for the already down-trodden.

From day to day, life is not bad. There's plenty of time for reading, writing and enjoying the countryside. It's only when thoughts turn to the term future that I see the arduousness of my position and the urgent need to get started in a career.

My hopes of a career in the service are becoming a distant memory as my thoughts and efforts turn to areas of employment, for better or worse. But next time I hear of an unemployed person starting a business, throwing a brick through a job centre window, I may be wrong. I may not understand something of what made him do it.

If only our present Government and the people of this country would say "OK, we have this problem of unemployment, let's tackle it together, let's stick together and see it through." But they don't. Instead we still have oews-

job and a physical revulsion to the task came upon me after a couple of months. Learning to type kept me sane and improved the quality of my forms.

In an attempt to keep it tough with my eldest group and to stay active, I advertised my services in the local press as a tutor of English, and was soon teaching a young hopeful for his O grade English. My spirit of enterprism was somewhat dulled when the DHSS decided to take away £5 from my benefit to make up for the £3 I was earning. I kept at it, however, as it looked good on my CV.

What does get me down is the way everyone who knows me - friends, relatives, driving instructor, barber, shoe shop assistant - all keep asking, "Any luck yet?" When I reply in the negative they then launch into a long spiel about how terrible it was that young folk couldn't get jobs, etc. etc. Next time you meet an unemployed person, talk about politics, religion, sex, anything but jobs. We like to forget about jobs occasionally.

Living in my parents' home, I have been sheltered from the poverty and grimier aspects of unemployment. But I have not escaped the subtle but devastating effects of unemployment. It has made me a great fence of



**Bac to the future**

The new A level review committee should be considering a broader approach along the lines of the International Baccalaureate, Alan Smithers and Pamela Robinson argue

The students usually take three subjects at higher level and three at subsidiary level, but four at higher and two at subsidiary is possible. This two-tier arrangement allows students to select subjects at a level which reflects their own preferences and capabilities. For example, a student who excelled towards the humanities might opt for higher levels in English A, French B, history, and subsidiary levels in music, biology and mathematical studies. A science specialist might take physics, chemistry and maths as "highers" and economics, English A and French B as "subsidiaries".

The old Schools Council over the years produced a whole series of proposals including Q and F levels, N and F levels, and I level, and each in their turn has been rejected.

At present, the main device for bringing breadth into the curriculum appears to be general studies, but whether this is intended to be integrative, complementary or compensatory is not entirely clear. We now also have Advanced Supplementary (AS) levels, and have yet to see how they will fare.

Probably there will never be complete agreement on what constitutes the ideal sixth-form curriculum. But something along the lines of the International Baccalaureate could provide a meeting point. Although like A levels it offers a framework for a two-year programme of study for the more able in the 16 to 19 age group, it differs fundamentally in intention and design.

It is aimed at providing a broad education with sufficient flexibility of subject choice to suit individual interests and abilities. Subjects are organized into six groups and it is expected that a student will take one from each:

- Group 1: Language A, the student's first language, including the study of selections from world literature.
- Group 2: Language B, a second modern language.
- Group 3: Study of Man in Society; history, geography, economics, philosophy, psychology, social anthropology, organization studies.
- Group 4: Experimental sciences; biology, chemistry, applied chemistry, physics, physical science, experimental psychology.
- Group 5: Mathematics; mathematics, mathematics and computing, mathematical studies, mathematics with further mathematics.
- Group 6: One from the following options: (a) art/design; music; Latin, Classical Greek; computing studies.

(b) an approved school-based syllabus.

(c) a third modern language, a second modern language or a second foreign language.

The IB, under the auspices of the International Baccalaureate Organization, is a programme of study which covers a wide range of skills and activities. It has been suggested that it is equivalent to four-and-a-half A levels, three from "highers" and one-and-a-half from "subsidiaries". The diploma, it has been suggested, may be all right for the very able like those at Atlantic College, but what about the ordinary sixth-form where even now about two-fifths of students are not up to A level?

This is an important point, but the IBO argues that the diploma works just as well at the ILEA's Hammersmith and West London College. The IB can be adapted to act as a profile of achievement. Perhaps only the bright pupils will get the whole diploma but others passing particular "highers" and "subsidiaries" would still be given certificates to recognize what they had done, including their contribution to the activities programme. At present, it is possible for a pupil to spend two years in the sixth form, fail A levels, and have nothing at all to show it.

A second line of criticism is that the breadth required for the diploma would unfairly penalize those able students who preferred to specialize. Would there, for example, be any real advantage in making a student follow courses in mathematics and science when his real talent might lie in the humanities? This is the kind of argument that led to the abandonment of the old School Certificate in favour of O and A levels.

But it is increasingly being realized that familiarity with a variety of forms of knowledge and different kinds of truth is important for living in the modern-day world. The two-tier structure of "highers" and "subsidiaries" of the IB allows students to express their preferences, but provides a balance that is lacking in the free-for-all of A and AS levels. As the headteacher of one comprehensive school commented after seeing the IB for himself, "it is such a fabulous experience for the intelligent and enterprising youngster that I would welcome something like that . . . AS level is such a drop in the ocean as to be less than worthwhile in my view".

Examination boards, the Secondary Examinations Council and the Standing Conference on University Entrance are already looking at the possibility of modifying A levels to meet the changes associated with the GCSE. Discontent with the narrowness of the curriculum which is offered to students in the sixth form and the poor predictiveness of A level is growing.

The International Baccalaureate which brings breadth into the curriculum, makes allowances for different levels of study and takes into account character as well as academic ability in an interesting alternative. The Dutch have already learned from it in their major examination reform and several countries, including Spain and Sweden, have introduced it experimentally into state schools. The IB was designed for special purposes and is itself not a potential straight replacement for the present system. But it could well provide a model for the successor to A levels which surely must come.

Professor Alan Smithers and Dr Pamela Robinson are in the department of Educational Studies, University of Manchester, S13 9PL.



## Let the consumer beware

[illegible]

**Martin, Loney**







## BOOKS

## The nearly man

RAB: The Life of R A Butler. By Anthony Howard. Jonathan Cape £15.00. 0 224 01862 0.

Politicians cannot foresee the episodes in their careers that history remembers. (If they could, many, one imagines, might abandon their clamour up "the greasy pole".) Thus, Neville Chamberlain and Anthony Eden must forever have the milestones of, respectively, Munich and Suez hung round their necks, while the good they did is, mostly, "interred with their bones".

Rab Butler seems to be destined to be remembered as the man who, despite his having crafted the new post-war Conservatism (the Toryism "with a human face" that is now so out of fashion) and despite his holding every other great office of state, never quite became Prime Minister. Significantly, the two episodes in Anthony Howard's exceedingly engaging and well-judged biography excerpted for Sunday paper pre-publication were his defeat by Macmillan in January 1957, and his even more galling experience of losing in October 1963 to such an insubstantial figure as Home.

To be passed over once for Prime Minister may (to adapt Lady Bracknell) be accounted a misfortune: to be passed over twice looks like - if not carelessness, at least a lack of inner steel. Much has already been written about Butler's wont of the killer instinct, of his inability to go for the jugular. His, for a politician, astonishing eschewal of intrigue; his refusal either to solicit personal support or to indulge in timely demagoguery suggest, perhaps, a deep-seated diffidence about his capacity to sustain the lead role or continuing inclination to do so.

But if any such doubt existed, it can only have been sub-conscious restraint. Time and again, during Churchill's grave illness in 1953, during Eden's absence in the testing aftermath of Suez, and during Macmillan's frequent tours abroad, Butler proved that, as Acting Prime Minister, he could run a government and run it exceedingly efficiently. Many therefore will continue to wonder whether, if he had emerged as leader in 1963 - as by dint of his immense services to the

party, he undoubtedly deserved to do - he might not have won for the Tories in 1964 an unprecedented fourth consecutive term.

However, Macmillan - or the Great Manipulator as Mr Howard terms him - contrived, even from his hospital bed, that whoever succeeded him, Butler certainly did not. The author traces Macmillan's anti-Rab animus (all the deadlier for being undeclared: their surface relationship never deteriorated below a kind of cold cordiality) all the way back to 1930 when Butler sent a teasing riposte to a passionately radical letter that Macmillan had written to *The Times*. Butler's obliquely subversive sense of humour (especially his *double entendres*) was, over the years, to earn him the dislike and distrust of those obtuse members of his own party who could never quite be certain whether he was mocking them or not.

Butler is one of the few politicians whose name is indissolubly attached to a piece of legislation. The 1944 Education Act will always be the Butler Act. Mr Howard gives a full and careful account of the complex twists and turns of the long and crucial negotiation with the Anglican Roman Catholic and Nonconformist Churches that preceded its passing. The accommodation and absorption of the Church schools had been the hurdle at which many previous attempts at devising a unitary system had fallen; and Rab was never more brilliantly adroit than he proved to be in surmounting it. This was the cornerstone of his early reputation. It led directly to his control of the highly influential Conservative Research Department and several other cognate organizations, to the devising of the Industrial and Agricultural Charters and to Rab's enduring hold over the more liberal and forward-looking elements in the Tory Party. By 1951, Butler had dragged the doctrinally still unregenerate party of 1945 to a position where it could once again win power.

He had had, admittedly, a smooth early ride. Born into a family long steeped in academic and public service tradition (his father, Sir Montagu Butler, was Governor of the Indian Central Provinces) he passed quickly

from Presidency of the Cambridge Union and an outstanding First in History to marriage to one of the country's greatest belles, Sydney Courtauld. His father-in-law made him an annual tax-free allowance of £5,000 - say £75,000 in today's money. Thenceforward he was not merely free of the money worries that dogged Churchill in the Thirties and Eden through most of his career but was exceedingly well off.

Mr Howard tells us little of Rab's domestic life, largely I imagine because marital happiness tends to leave little to tell. This contentment was cruelly curtailed by Sydney's death from a particularly vicious kind of cancer at a sadly premature 52. However, a second marriage to his first wife's sister-in-law Mollie was also full of felicity.

Aspiring candidates in these desperately competitive days will envy the ease with which Butler slid into the



## 100 years of fortitude

Marling School 1887 to 1987. By Oliver Wicks. W Oliver Wicks, 28 Rodborough Avenue, Stroud, Glos GL5 3RS. 22s. Postage £1.25.

A bitter battle is being fought over Marling School, Stroud. It is a battle to Marling's vitality that it has survived at all.

A history written by a former master, W Oliver Wicks, for its centenary year, 1987, says merely that it is a grammar school with a particular selective entry at least until the end of the 19th century. Since he wrote the Gloucestershire County Council schools subcommittee has come up with reorganization plans that would mean Marling's closure, though there are signs of re-thinking.

The Secretary of State decided in March last year against the reorganization proposed. He did not think it would be of benefit to all pupils, particularly the more able secondary ones. In 1983, when he had refused proposals for a comprehensive system, he cited "the sustained and sustainable" record of success of the private made for pupils of 16-plus at Marling School and the neighbouring St. John's High School.

And so Marling survives. Just. But Peter Halsey, an old boy like Mr Wicks who joined the staff of the *Times* in 1961, thinks Marling breeds isolation. It would prefer to call it a selective boarding school, rather than a public school, a school with a discipline that is not shared, rather than a dangerous speculation on risky originality, except in school. It has so far produced three Fellows of the Royal Society.

The school was founded because of concern about the growing threat of German, French and American commerce and industry. Mr Wicks's story shows that the study of history and mathematics has predominated over the arts subjects.

Any reasonable school can produce its list of successful old boys - and succeed to spite of their teachers - but the choice in the history discipline is a varied list: a president of the Royal Astronomical Society; a president of the Rugby Union; a president of the Oxford Union who became Lord of the Dragon Pursuivant of Arms; the director of the New London Consort. One old boy, teaching the King of Swaziland, was an officer on the night of the 1982 Falklands, acted as a witness on the bridge during the evacuation of foreign nationals from Aden.

An emphasis on school sports has produced a tradition of passionate service. The old boys have included a VC and a GM winner. But it is difficult to know how much a school influences or inspires its pupils. In my own case, good teaching of German early on at school plus later encouragement to take up music led me with an abiding interest in the villa with Mr Wicks has had a profound and abiding effect on me. Broken ease at rugby ended as I wrote the game and I wrote about it some times for *The Times*. A schoolboy failed Marling or it failed me. But in 1985 about 25 per cent of the boys left Marling went to universities, with Cambridge and Oxford among the five most popular.

As for influence on character, even harder to tell. There are chapters in the history are: "Discipline", "Tone", "Smiles", "Help", "Smiles", "Tone", and "Duty". Come to think of it, Marling remains a bit Victorian, despite its strength, like that of Victorians, remains the product of individuals who can also be men. In 1964 *The Field* published a list of schools with the most notable since the war. Marling came with 13. J V Smith and A. J. played for England.

Martin Fagg

## Software survey

Microcomputers in Education. By John Self. Harvester Press £8.95. 0 7108 0946 8.

This is an important book that deserves wide readership - by parents able to cope and throughout the teaching profession. The title is wrong though - John Self is not giving the would yet another account of how microcomputers have made a mark in schools and colleges. Rather, he offers a realistic, worthwhile and fairly hard-hitting survey of learning software - its content, style, friendliness. The book's subtitle - A critical appraisal of educational software - is rather closer to reality, for he does name names. A high proportion of the text consists of thoughtful and generally scathing reviews of well-known programs from well-known publishers.

There is no doubt that many of the aforementioned programs are exceedingly poor. They are poor in their view of what learning is about, poor at communication, poor at applying well-established educational principles, slow, unexciting. John Self could have thought, such as much material from the United States, or quite a lot from the garrets of those teachers who publish themselves their own proud efforts. That would, however, have been unproductive to the extent that the fewer readers would have known just what he meant.

That is not to say that this book will say little to the reader who knows very little of the programs discussed. Self has actually managed very well to steer the middle course between boring the reader with excessive detail and losing the rest of us by making too many assumptions.

Perhaps his most important chapter is "The institutionalization of education" (a phrase he's used elsewhere). Nearly all of us have little choice but to administer to our learners BASIC programs that the only software and hardware we can get. Each year, it is becoming harder to break us out of the mould of mediocrity that automatically follows. MEP's efforts are not welcomed here as helping us forward; its successor, MESO, isn't mentioned. I wonder how Self will rate it in a few years' time?

Management Information Systems and Computers. By Roy Anderson. Macmillan £16. 0 333 39852 1. £7.95. Management Information Systems and Data Processing. By Trevor Bentley. Holt, Rinehart and Wilson £7.95. 0 03 910688 8. Human Resources and Computing. By Ian Winfield. Heinemann £12.95. 0 434 92269 2. Computers and Personnel Management. By Michael Gallagher. Heinemann £14.95. 0 434 90645 X. Microcomputers in the Hotel and Catering Industry. By Sarah Godowski. Heinemann £7.95. 0 434 90093 1.

Management is a complex beast, says Roy Anderson in his book. Thus the systems (human, information technological, and computer based) that have been set up to assist management must be complex too. Even so, they ought not to be beyond the grasp of the day-to-day user.

Anderson's book is aimed at undergraduate students and provides a thorough factual basis to further study. The wide range of contexts is a strength in many ways, but it is a weakness too, in catering for economics students as well as for those following computer studies courses (for instance), he is to some extent talking down to some of his readers while flummoxing others. All the same, this is certainly a book for FE and HE teachers to consider.

provides reviews, of a page or two each, of popular down-market hardware and/or software systems, with photographs as appropriate. Those looking at it in this way include *Wordwise Plus* on the BBC Micro, *Locoscript* on the Amstrad PCW, *GEMWrite* on the Atari ST, *Quill* on the QL, and a dozen more.

The remainder of the book comprises introductory background and detailed descriptions of a series of sessions (*Quill* again), and a set of chapters on hardware, techniques and maintenance. The whole is highly practical, highly personal, highly useful.

Chastel Munster's *Keyboarding in the Past Lane* is like its title, none too thrilling. Set direct from daisy wheel printout (less than perfect printout at that), the text is relieved only by a few irrelevant cartoons. But the book does provide a well-graded series of exercises and has a glossary and an index. It should be usable by a competent student and may also be helpful to tutors looking for ideas to help groups, tapping away. However, in chief case, the learners will need system-specific help and advice.

Korvian and Wood's *Word processing: a complete guide* is neither a first edition nor a complete guide. Its most novel feature is to have been printed on pale blue see-through paper. Its market is clearly the user in a large office (or even his/her supervisor) where there is a lot of technical system detail that will leave school users and their teachers cold.

Anna Ruthven seems to be the National Extension College's tame

## BOOKS IN CLASS



Old technology: a striking reminder how it all started, from The Computerized Society by S Pizzev and S Snowden, a Tomorrow's World title from Wayland (£4.95).

## The man-machine interface

Eric Deeson reviews some recent IT and word processing texts

Management Information Systems and Computers. By Roy Anderson. Macmillan £16. 0 333 39852 1. £7.95. Management Information Systems and Data Processing. By Trevor Bentley. Holt, Rinehart and Wilson £7.95. 0 03 910688 8. Human Resources and Computing. By Ian Winfield. Heinemann £12.95. 0 434 92269 2. Computers and Personnel Management. By Michael Gallagher. Heinemann £14.95. 0 434 90645 X. Microcomputers in the Hotel and Catering Industry. By Sarah Godowski. Heinemann £7.95. 0 434 90093 1.

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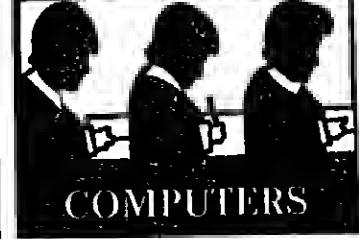
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Trevor Bentley's *Management Information Systems and Data Processing* first appeared in 1982 and now appears in a second edition. While it aims much more at budding systems analysts and accountants, it does also try to appeal to a broad base of students. However, it falls between stools less often than the Anderson text, and will be found more useful by secondary teachers of business and computer studies.

While a good number of modern further and higher education courses have to take serious account of what the jargon calls the man-machine interface, it is surprising that very few books deal with it in depth. It is, however, of prime interest to fan Winfield in his *Human Resources and Computing*. His splendidly thorough yet readable coverage will benefit teachers and trainers working with new information technology in any context, as well as office users and the interested layman. It does not, however, deal with health and safety

aspects, nor with the ergonomics of systems - its sole concern is human interaction with computers.

Michael Gallagher, in his *Computers and Personnel Management*, writes from a conviction that today all personnel staff should have a good knowledge of the subject, because so many appointments are in these technical areas - and also because so many debates between management and staff are confrontations arising from the use of computers. Here then, one would expect to find material on health, safety and ergonomics - alas, no. Gallagher, like Winfield, has decided to steer clear of what is admittedly a very tricky area. Otherwise, it's an excellent book.

Sarah Godowski - the only female writer in this select group - doesn't touch these areas either, her *Micros in Hotels and Catering* (to reduce the mouth-filling title) relates to a widely used video film on the subject and aims at the practitioners as well as at further and higher education, but this is an excellent background reading book for secondary teachers - in business studies and computing (when looking for good case-study material), as well as in tourism, hospitality and catering. The book is fairly short, with just over 100 unnumbered pages. And while that makes it easy to read, it leaves one with a sense of having dined meagrely on non-volatile cuisine.

## CHILDREN'S LITERATURE

Shots. By Nigel Gray. Lutterworth Press £6.95. 0 7188 2636 1. Double Vision. By Gill Wright. Hamish Hamilton £6.95. 0 241 11996 0.

In these two teenage novels violence and anger, disabling and destructive in their compulsion, confront the reader. Both writers perform that most difficult of feats: they describe the impact of violent emotion with considerable intensity while neither glamorizing nor minimizing its effect.

The violence depicted in Nigel Gray's *Shots* is racism at its worst, its most aggressive. Feelings of blind anger and prejudice are translated into the language of street violence, violence which results in the death of a mother and her children. Sarah, who lives among these inner-city racial tensions, learns about the consequences of rage and hatred through her own and her father's grief at losing their friends. She also learns how anger can be used and turned into positive actions which restore harmony, not only in society but also in her own relationships, when in a first-moving *denouement* she and a friend uncover an armed gang planning yet more street violence.

At one level then, this is a novel for our times, but it is also the story of a girl's growing acceptance of the intricacies of personal relationships; in her father's breaking with his girl friend, in her fierce love for his children, in Sarah's own friendship with Ev who comes to regret describing her as "white trash". One criticism might be the emotional density of this novel: strands of feeling are woven so thickly that at times they're difficult to disentangle. However, the action moves on fast enough to provide a pathway through the emotion and the result is a tightly written and convincing story.

The violence in Gill Wright's *Double Vision* is of a very different kind, here it is the destructiveness of guilt and personal misery, turned in on itself, that has such overwhelming force. Sam's numbing self-hatred, so disabling that it holds him a virtual prisoner in his own home, is caused by guilt at being the unwitting instrument of his father's death.

The overt, random violence described in *Shots* contrasts with the understated but clearly directed anger that Sam feels for himself and his predicament. Learning to like and respect oneself is a painful process, more painful by far because coming to terms with those we perceive to be different from ourselves. He slowly begins to win self-respect through creating an imaginative world for a lonely old man with a bold on reality about as tenuous as his own. As Sam's grasp of reality slips even further from him, and he is in danger of losing this hard-won respect, a positive act of friendship from the girl he had introduced into his fantasy world restores him to normality and a sense of worth. The unfolding of Sam's pain and loneliness and the palpable relief when these are resolved make for an absorbing story, although somewhat drawn-out at times.

Both books offer insights into how destructive emotions may be mitigated; both provide positive ideas on how individuals can actually contribute to the processes of healing and reconciliation. Powerful encouragement to teenagers, who need to feel they can do something to make things better.

Margaret Kinnell

## Practical politics

Where There's a Will. By Michael Heseltine. Century Hutchinson £12.95. 0 09 168200 2.

Michael Heseltine is one of Britain's most energetic and flamboyant politicians. His resignation over the Westland affair removed him from the Cabinet but not from the small group of senior Tories with some hope of succeeding to the leadership. As became clear in the Westland saga, however, Mr Heseltine was not merely at odds with Mrs Thatcher over what should be done to save the helicopter company. He was critical also of the Prime Minister's whole style of running the Government and of the approach which had been adopted to the relationship between government and industry in Britain. In this book, however, Heseltine has avoided explicit criticism of the Prime Minister or indeed anything which might smack of party disloyalty. Instead, he focuses on the problems facing Britain and the various strategies which might be adopted to solve them. In so doing he makes the case for a version of Conservatism which is more pragmatic than that which has been fashionable under Mrs Thatcher's leadership and he thus provides a clue to what the next phase of Conservative policy might look like.

At the centre of the intellectual debate is the question of the proper role of government. What things should government do and what should be left to the market? For some this question can be answered on *a priori* grounds because the market



will inevitably generate morally superior or more efficient solutions to those provided by government. For others, the question has to be answered on a case-by-case basis. Within the Conservative Party over the last decade there has developed a presumption against the public sector and a somewhat mindless hostility to government intervention. Countering this prejudice is one of the purposes of Heseltine's book.

Heseltine wants to see a partnership between the various sectors of British society and in particular between private enterprise and the state. Contrary to current Government policy, he wants a national strategy for industry which will enable "the workers, the managers and the owners of wealth to travel the same road to national recovery with shared objectives and with the widest possible understanding and respect by each partner for the other's role". Thus, although Heseltine is a vocal supporter of the Government's radical initiatives of privatization

and spreading support for capitalism through wider home ownership and share purchase, he recognizes that an adversarial attitude between public and private sectors is damaging and that the national interest may not always be served by the free play of market forces. National defence, for example, requires a strong industrial base with competing defence contractors; but national considerations also demand government intervention in such key sectors as the car, steel and air frame industries.

On educational policy Heseltine recognizes that central government must take a more active role than hitherto to improve standards and ensure that young people receive the kind of instruction that will enable them to cope with a rapidly changing environment. This is not the philosophy of education to industry. It is rather a recognition that our state schools compare badly with those of other European countries and that the government has a duty to improve the standards they provide

for individual fulfilment and for the wider world at work. In Heseltine's opinion the existing decentralized system of education is too slow and ponderous to change and must be made more responsive by central direction - a change which corresponds with Mr Baker's thinking.

The strong role for government which Heseltine advocates and the partnership which he wants to encourage should not be confused with earlier models of corporatism or tripartism. Heseltine has a "bias for action" and has no time for the bureaucratic mentality which so often pervaded government in the past. It is possible that the experience of two Thatcher administrations has indeed changed the ethos of Whitehall so that civil servants are now entrepreneurial and imaginative rather than cautious and consequential. Certainly Heseltine's own innovations in government suggest that the system can respond to a dynamic Minister and that even the opposition of the Treasury can be overcome. Although Heseltine's discussion of the need for a new breed of executive-minded civil servants, more interchange of personnel with the private sector and of the MINS system of departmental management falls to deal with the problem of reduced morale in the public service, it is evident that Heseltine has given some thought to the machinery of government and that he himself knows how to control a department.

Ultimately this book is the statement of a practical politician who is impatient with the ingrained habits of British administrators as he is with the ideologues of the free market. The writing will not inspire the reader, but there is a thoughtfulness and compassion which should encourage anyone concerned with the future of British politics. It remains to be seen whether Heseltine's slightly maverick image will prevent him from spreading those qualities beyond the back-benches.

As for influence on character, even harder to tell. There are chapters in the history are: "Discipline", "Tone", "Smiles", "Help", "Smiles", "Tone", and "Duty". Come to think of it, Marling remains a bit Victorian, despite its strength, like that of Victorians, remains the product of individuals who can also be men. In 1964 *The Field* published a list of schools with the most notable since the war. Marling came with 13. J V Smith and A. J. played for England.

Graham Peck

This week's Computers Extra includes a survey of GCSE textbooks, pages 41-64

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**Nick**



## RESOURCES

## Bigger Macs

Ray Hammond introduces a range of new computers for education

At the year's most important computer show in Hannover last week, three major computer companies introduced microcomputers likely to have a significant impact on the educational market.

Apple marked its tenth anniversary by launching two new ranges of computers and a flurry of peripheral products and software packages. Commodore, now struggling to recover from a disastrous two-year recession, announced two new machines, one aimed at schools, the other at further education. Atari also announced two new machines, one of which is of interest to secondary schools.

Although Apple is still only the third most important supplier of computers to education in Britain, outside the UK the company dominates the international education market at all levels. Its new machines include an expandable version of the best-selling Macintosh Plus and a completely new machine called the Mac II.

At the Apple launch UK managing director David Hancock said: "We regard education as a vital market. By placing Apple products into the hands of students we know we are creating customers for our business machines in the future. We will be making very attractive educational discounts available in Britain."

The Apple Macintosh machines are rapidly gaining ground in education through the ease of use offered by the mouse-based operating systems. Specialist applications such as desk-top publishing (see this week's Computer

Extra) are also proving attractive to secondary schools.

As far as British schools are concerned, the immediate effect of the Apple initiative is unlikely to be a clamour for the more powerful Macintosh machines. Instead, it will probably produce more attractive educational deals on the existing Macintosh 512K and the Macintosh Plus. It is likely that the 512K machine will eventually be discontinued, but it will remain compatible with the majority of Macintosh software. The high street price of the Macintosh Plus with one megabyte of RAM has now dropped to under £2,000 (the 512K Mac to under £1,500) and educational users can expect discounts of up to 30 per cent in some instances considerably more.

Apple's new machines are dubbed the Macintosh SE (System Expansion) and the Mac II. The SE offers improved performance, two built-in disc drives (either floppy or hard disc) and is the first Macintosh to have true "open architecture". The machine has slots for expansion cards which allow users to enhance the machine and connect it to the MS DOS software environment. Standard RAM is one megabyte (expandable to four) and the retail price is £2,495 for a dual floppy disc system. The Mac SE is available immediately.

In technical terms the most exciting new product from Apple is the Mac II, a true 32-bit microcomputer based on the Motorola 68020 microprocessor. This computer offers four megabytes of RAM, an astonishing colour capa-

bility and very high processing speed. Apple say it is likely to find markets in further education, science and business and the retail starting price will be £4,500. Volume production begins in July.

Over the last two years Commodore have suffered in all areas of the microcomputer market and despite the fact that the company was first to supply micros to British schools (the Commodore Pet), only a few schools now use them. A year ago the company launched its "recovery" product, the Amiga 1000 which offered a wide range of sound and colours and was coupled with a mouse and easy-to-use operating system. Hopes were high that the company could recover some of its educational market in the UK and emulate its performance in Germany where it has remained one of the leading suppliers to education.

But the Amiga has been dogged by production problems and slow software development. Despite this, critics have praised the machine and at Hannover the company introduced a new low-cost version which will be of interest to British education. Called the Amiga 500, the computer is priced at £499 plus VAT (Commodore UK do not currently offer educational discounts) and offers features which include four-channel hi-fi and stereo sound, a MIDI interface which allows the computer to control electronic musical keyboards, a film-animation facility which allows videos to be created and edited and full mouse-controlled software. It is supplied with



512K of RAM and nine 3.5 inch 800K floppy disc drive.

The second Commodore introduction is a more powerful Amiga, the 2000. This machine offers the opportunity of using MS DOS (IBM-style) software, but in particular offers enhancement of the Amiga's well-developed colour and sound capabilities. The up-market Amiga is available with a choice of disc drives, including 3.5 inch and 5.25 inch floppies and 20 or 40 megabyte hard discs. UK retail prices start at £1,095 plus VAT for a machine with one megabyte of RAM and a single 3.5 inch 800K RAM disc drive. Both of the new Amigas are expected to be available next month.

The third major company launching products for education is Atari, formerly best known for its excellent computer games but now known for the ST range of computers. In Britain the company has had difficulties with distribution, but a UK team is now in place and a spokesman says that educational discounts are available "by negotiation".

The most important new Atari product is the Mega ST, an up-market machine which although of limited interest to schools, has had the effect of pushing down the retail price of the excellent Atari 520 ST to £299 plus VAT. The ST machines offer more and Windows graphics, which enable students to use them easily, and a new enhanced ST offers up to 16 megabytes of RAM, three hard disc drives for music, three-channel sound and a wide range of ports for connection to other PC environments. The retail price of the Mega ST, which is due in July, starts at £700 plus VAT for a one megabyte RAM machine with single 3.5 inch floppy disc drive.

Almost as an afterthought, Atari have also introduced an IBM PC-compatible machine at a price which places it against Amstrad's PC125. The PC, also due in July, offers 128K of RAM and a single 5.25 inch floppy disc drive for £495 plus VAT.

Computers in Education Extra 41

## Feeling the pinch

Jean Sargeant reviews a package of BBC programmes on the painful effects of joblessness

**CONTINUING EDUCATION**  
The World of UB40  
BBC1, March 8  
Advice Shop  
BBC1, March 10-12  
The Smiths  
BBC1, March 15-20, 10.40pm  
Jobless not Worthless  
BBC1, March 25, 11.15pm  
Two Nations  
BBC1, from April 7, 11 pm.

To some UB40 is a band; to the unemployed it is a benefit card. The World of UB40, a drama broadcast last Sunday night on BBC1 was designed as a curtain raiser to a cluster of BBC programmes on unemployment.

However, even if one man's meat is indeed another man's poison, I find it difficult to believe that this "offbeat look" at what it is like to be out of work was viewed with any degree of enthusiasm.

True, some of the facts intercut with the drama were vividly expressed: in 1985 the unemployed would have filled three Wembley stadiums; last year (not counting people on special measures) 34 would have been needed. Overall though, it was poor stuff. The characters were unconvincing, the humour cringe-inducing and the style laboured. Even the music, specially written and sung by Ian Dury with Chris Jankel, failed to cheer me up.

It was not possible to preview Advice Shop which went out after The TSS had gone to press, but in principle, consumer programmes of this sort, offering practical advice for those trying to get back into work, are to be welcomed. The tone of the series is somewhat critical of the Manpower

Services Commission's measures, but viewer feedback in the past has indicated that the programmes were often not critical enough. Last week they examined Re-start, the newest back-to-work scheme.

Now, spread over this week, from Sunday to Friday, a series called The Smiths provides the highlight of this UB40 batch of programmes. The Smiths are a real family from Peterlee, a new town in County Durham. Over six programmes we watch them tackling the task of making ends meet: Paul, the younger son, who got a job offer YTS and is consequently the main breadwinner; slips his unemployed father a few pounds to tide him over; mince is the gastronomic highlight of the week; Carol struggles to keep cheerful for her husband's sake; the Sunday outing is to gather wood... At the recent press preview which the family attended, John, the elder boy who has never worked, announced that he had just started on a "fantastic" Community Programme place at a youth club. The Smiths are not work-shy scroungers; they want jobs, welcome training, are willing to move. They believe the State has let them down.

If one of the characteristics of an education programme is that it leads people to actually do something, then The Smiths is a good example of the genre. The programme itself has grown out of research commissioned by the BBC from academics at Newcastle University's Centre for Urban Regional Studies. Their report, which sets a context for the programme, argues that official figures underestimate unemployment by nearly 50 per cent. Post-programme activity is being organized by the newly created "E Force" (a joint BBC/Community Service Volunteers project) in association with Replan. Developments include a high street "Opportunities Shop", a "talkback session" for local people, viewing groups, and the organization of information and learning activities for people out of work in Peterlee.

In the week after The Smiths, Jobless not Worthless will examine unemployment in relation to people's health. Clips from EastEnders featuring Arthur Fowler illustrate the theme. Contributions cover the work of the



Willing to work: members of the Smith family

Inner City Trust in Londonderry and the opinion of experts such as Marie Juhoda. A final series of programmes, Two Nations, will start on April 7 and will study the changing pattern of employment and examining policies successive governments have taken in order to stop the rise of unemployment.

The last word on The World of UB40 belongs to John Smith. "It's gnt to be about how unemployed people feel - the effect it has on people, the health effect, the depressive and demeaning effects of it, the financial aspect. There is a whole story to tell there, isn't there?" He ought to know.

cent. Post-programme activity is being organized by the newly created "E Force" (a joint BBC/Community Service Volunteers project) in association with Replan. Developments include a high street "Opportunities Shop", a "talkback session" for local people, viewing groups, and the organization of information and learning activities for people out of work in Peterlee.

briefings  
radio & tv

For schools

**LET'S MOVE!**  
(Monday, 11.20 VHF4)  
A new unit, "Noah's Ark", allows younger infants to create all sorts of creatures from crapy-crawlers to cuddly-furries.

**CONSUMER EDUCATION: VALUE FOR MONEY**  
**NB** (Monday, Tuesday, 00.30 VHF 4)  
A new series aims to protect teenagers from the minefield of the "consumer desert". Presented by Val Bell of the Consumers' Association, the programmes deal with straight purchasing, money problems, value for money in leisure pursuits and rights over health and housing.

**MEDIA STUDIES: RADIO WORKSHOP**  
**NB** (Wednesday-Friday, 00.30 VHF 4)  
A short introduction to radio programme making for 14 to 17-year-olds. Deals particularly with drama productions and different ways of covering news items.

**SOMETHING TO THINK ABOUT**  
(Thursday, 10.15 VHF 4)  
Infants find out how to get help quickly in this new unit. "Dial 999" follows a WPC on her beat and defines what is a real emergency.



Peter wants his toboggan to slide easily. What is he doing to the runners of his toboggan?

## Picture this

Science Scene Setters: Primary Science Topics from British Gas  
Six sets of work cards together with teachers' guides  
25 per cent discount price of £24.75 until August 1 1987  
British Gas Corporation, PO Box 46, Hounslow, Middlesex TW4 6NF.

The advertising pamphlet says that British Gas, "as a high-tech industry, has a vital interest in the science capabilities of the next generation". If that is true then they are doing the right thing by influencing primary science with this well planned and

convincing series of work cards. The cards, written by Eddie Murray and Roy Crittenden of West Midlands College of Higher Education and Brian Nicholl and Jenny Selfe of NS Education Consultants, London, are arranged in six familiar topics: Air, Flight, Forces, Heat, Ourselves and Water. Each topic set has a well written teachers' guide which includes a facts sheet with background information so that teachers can do their homework beforehand. The 10 individual cards for each topic are discussed in the guides with interesting advice for both experienced teachers and beginners.

A useful feature of the cards is that

they come in sets of three, thus enabling a group of six children to work on the same activity (in pairs). Most of the apparatus required is inexpensive and often free to those who are willing to scrounge for it, so a manageable circus involving four or five groups in a classroom could easily be arranged.

The title Scene Setters refers to the way the cards are designed. Besides being colourful and attractive, one side of each card is devoted to a discussion cartoon. This sets the scene, with the addition of suitable questions from the teacher, for the practical work on the other side. The children are given clear written and pictorial instructions for the activities, thus catering for readers of all abilities.

Although the authors claim a balance between content and scientific process the instructions on the cards are inevitably prescriptive and leave only the tiniest room for inventiveness and decision making on the child's part. "Ourselves Card 5", for example, asks "How well can we see?" The pupil is told how to administer a sight test, but this could have been a golden opportunity to ask children to design their own experiment - something they are quite capable of doing. Elsewhere ("Heat Card 1" and "Forces Card 9") the skills of predicting and controlling variables could have been given more prominence and I have yet to see a pair of synchro "wings" spin successfully to the ground as illustrated in "Flight Card 4".

The strength of this publication, though, is that children are encouraged to get out of their seats and learn by practical activity. The non-specialist will be encouraged by the advice given in the guides and the classroom science can be related to the real world through discussion based on each "Scene Setter".

Robert Johnson

## Good sense

**The Rubella Action Pack**  
A multi-curricular approach to rubella health education.  
Price £4.95 + 35p postage.  
Produced by SENSE, 311 Grays Inn Road, London WC1X 8PT.

Safe and effective vaccination against rubella (or German measles) has been available to women and girls in this country since 1970. Although a mild disease in childhood, rubella can be

devastating if contracted in pregnancy. Most girls are tested for immunity and offered the vaccination between the ages of 10 and 14 - the target level for school vaccination is 95 per cent. But many areas are still falling short of it, which means that there are young women leaving school and contemplating pregnancy without knowing whether they are immune or not.

SENSE, the National Deaf-Blind and Rubella Association, has produced this excellent package of teaching materials on rubella, its purpose being to increase the number of girls vaccinated. Designed to be used by teachers and the school nurse in the week or so

preceding the sending out of the vaccination consent forms, it contains material which can be used in a variety of settings across the school curriculum. This could mean tutorial periods, health education, maths, art, drama, biology, or PE.

In so attractive a pack with sturdy photocopyable pupil material and information for teachers, this will be an invaluable part of the health education programme in every school, whether primary or secondary, that wishes to take seriously its responsibility to educate about rubella.

## Great expectations

Studying to Succeed  
History at A level and Beyond  
Price £1.95  
Longman Group UK Ltd, Longman House, Burnt Mill, Harlow, Essex CM20 2JE.

One piece of advice often given to students "at A level and beyond" is never to let assumptions go unchallenged, and there's one which needs challenging here - that you succeed at A level history in just the same way as you succeed to university history.

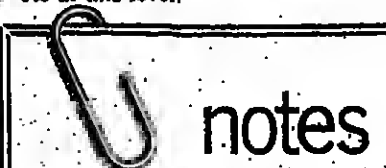
It isn't quite true, and in general the author John Mee's advice is more suitable for "beyond" A level. The students who arrive at his door to study for history degrees don't, he says, have any idea how to study effectively, yet clearly if they hadn't succeeded at A level they wouldn't be there. He may well find it annoying that they are not used to academic libraries, or to compiling their own reading lists for essays, but most A level students don't have the time or the opportunity to acquire these skills, so the advice about how to do it could be inappropriate at this level.

Nor are students expected, at A level, to write the kind of introduction to an essay which Mr Mee would contain surveys of the field, review of their reading, and evaluation of primary sources. A level students haven't the experience - or the time for much more in an introduction than an attempt to analyse the question.

And we discourage them from writing narrative, though understanding it they often have an overwhelming desire to write it, so the emphasis here on the importance of good narrative writing is counter-productive. With a slightest encouragement A level students will be away, charging Mr Mee's cavalry right off the field of action for miles.

So, while there is undoubtedly excellent advice here, Mr Mee's book perhaps sticks to initiating students into full-time university history at one subject, and leave it to teachers to help their candidates cope with the inevitable constraints of studying three, only becoming tighter at AS exams can only become tighter.

Jessica Sargeant



## notes

## MOVING OUT

A new pamphlet published by the International Year of Shelter for the Homeless is designed to inform young people about the pitfalls of leaving home. It includes information on renting, lodgings, bed and breakfast, council housing, housing associations and co-operatives; short-life housing and buying a home. It also looks at the rights and responsibilities of tenants and landlords and lists 12 organizations and publications which will be able to help them. "Moving Out" is available from IYSH, 19-29 Woburn Place, London WC1H 0LY, (01) 837 7151.

## SCHOOL STEAMING

A new book from Museum of Childhood, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.



A sense of déjà vu? Two contributors to the Great Debate

## What's the matter?

**CONTINUING EDUCATION**  
Education Matters  
BBC Radio 4VHF, Sundays 4.30pm.

"Our new education programme comes at a time when teaching and learning have never been higher on the agenda of political debate," said Susan Marling, introducing the first in the series, Education Matters.

"Of little memory, it is just 10 years since a prime minister, so less called for and got a Great Debate on education. But in another sense Miss Marling is indeed correct. Jim Callaghan did not face a seemingly never-ending succession of pay disputes and classroom disruption, a new examination system for 16-year-olds, and a rapid privatization of the service by a number of local authorities. Indeed, it's hard to remember just what he was worried about in that far-off peaceful time.

Not that the teachers' pay dispute necessarily does or should impinge on "teaching and learning", as Miss Marling implies. But sadly, in all too many minds it does. Education correspondents and commentators on a number of national newspapers and in the "inform" their readers, listeners and viewers about curricular practice



## END PAGE



'Thinking about the computer's role in education does not mean thinking about computers. It means thinking about education.'

Ellis, The Use and Misuse of Computers in Education, McGraw Hill 1974

## Identifying needs

Peter Heaney argues for an investigation into information technology in the primary school

Information technology in education is potentially a powerful instrument of curriculum change. Considering the role of IT can provide an opportunity to re-examine the curriculum generally. Yet the introduction of the new technology in primary schools has neither affected children's learning greatly nor caused general curriculum development, because it is being used to support the existing framework rather than to promote change.

With the introduction of computers, the primary teacher is faced immediately with the practical problem of assimilating and integrating the technology. Curriculum integration is crucial. If the teacher is not aware of the potential for change, then any innovation will be shackled within the limitation of existing technologies and effect only marginal change in the existing curriculum.

One major problem is the tendency to accept that achieving an operational

competence is the most important requirement of the teacher. When using a wordprocessor, for example, one of the most successful applications of information technology in the primary school, a lot of effort is spent becoming operationally proficient. Teachers are taught how to edit by text insertions, deletions and resequencing. However, the vital questions are often unasked.

With perhaps only one computer to be used in a number of classes, classroom management becomes an area of concern. Uncertainty of purpose leads to a situation where the use of the computer may, from the children's point of view, be termed as functional. The computers are used as electronic page turners or monitors, leading the children through a predetermined sequence of "learning" activities which may have little specific relevance.

Decisions and priorities about the use of the computer cannot be taken at this functional level. In the primary school information technology can

have an important impact on language development, particularly with the use of wordprocessing and the greater freedom with which the children can edit their work; and on information skills, such as the children's ability to research, collate, interpret and apply information within a given context.

The benefits of information technology are most apparent in language development. The most prevalent use is in wordprocessing. However, it is not by achieving operational proficiency but by examining the nature, scope and role of writing in children's language, that any benefit can be achieved.

Since the use of a wordprocessor can easily facilitate the children in drafting and editing their work, the question should be, what do we want the children to achieve by editing? The aim of drafting should not be the production of "Good Work". In terms of presentation criteria, to realize the potential of wordprocessing for children's language, the teacher has to

consider elements of a successful writing environment in the classroom.

Children sometimes have little sense of writing for an audience. If language is accepted as a communication process, how important is the role of audience in their writing? Is the teacher usually perceived as the only audience? And how often can they identify with their work from conception to completion, or communicate their own thoughts or interpret experiences?

If writing is not seen as purposeful, it is almost impossible to convince the child of its value, and if there is little purpose in writing, then there is little purpose in editing or drafting what has been written.

It is through writing and reflecting on what has been written that the child is made aware of his thinking and begins to exert a control over it. So how can the curriculum, supported by the technology, allow him the opportunity to reflect on how well the written work communicates?

Information technology has provided a very powerful tool for handling and managing information, but it is not just a matter of the operational level. There are the wider skills of identifying the purpose for which the need the information, refining it into suitable areas for investigation, identifying the questions to be asked, collecting the relevant data, and converting the data into valid information within the context of their original purpose. The use of the information technology "tool" needs to be taught within the context of this range of information skills, and within a curriculum context which will provide a purpose for the activity.

Information skills can be defined as the ability to research, collate, manipulate and apply data. However, it is only valid where there is a genuine problem. The range of skills is wide and varied, and the child has to learn not only to manipulate the data to create information, but also to construct possible solutions for their problems. He must be able to define the problem effectively and to search for and create suitable information.

These skills are not generally developed in the primary school, and little consideration is given to justifying the educational validity of a lot of software material which is used in the class.

By itself information technology is not able to achieve its full potential. There is a need for a specific process of evaluation to facilitate the integration of IT into the curriculum and direct subsequent change based on identified needs. Without it, the impact of information technology in the primary school will at best be peripheral and at worst a re-implementation and re-trenchment of existing practices.

Peter Heaney teaches in the Primary School in London, Northern Ireland.

## According to the Gospel

Gospel Resource Sheets  
Price £18  
Edward Arnold, 41 Bedford Square,  
London WC1B 3DQ.

This collection of worksheets is based largely upon the Gospels of Matthew, Mark and Luke. There are 30 sheets, all of which may be copied for use within an institution. They are aimed particularly at pupils in the second and third years of secondary school but could, the preface says, "provide a pleasant way of reinforcing some important points at GCSE level".

Teachers' worksheets reflect their own particular style and methodology. Many teachers do not follow a textbook, but use a number of books in order to produce their own notes and "personalized" material. It therefore seems rather depressing that Edward Arnold have seen fit to publish a set of standardized worksheets, particularly with activities like "colour in Mary's light blue robes and white lilies" (worksheet 3). Is it a vain hope that second and third year pupils could be encouraged to do something more purposeful? The educational objectives seem obscure.

Other sheets are equally obscure: "Find out all you can about epilepsy (and ask your teacher what he/she would do if someone had a fit in class)". Why can't the pupil find out something that relates more to the meaning of the story? Worksheets of this kind, which are used by all teachers, but are used by someone else's suggests a lack of insight and initiative. These sheets are dull and lack purpose.

Alan S Brown

Two new sets of slide packs and booklets on different cultural groups at worship focus on The Hindu Temple and Its Symbols (£15.25, £10.50) and The Orthodox Liturgy (£15.25, £9.70). Both packs are available from The Slide Centre Ltd, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 471, 473, 475, 477, 479, 481, 483, 485, 487, 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**Scale 2 Posts and above**

**HEREFORD  
AND WORCESTER**

Experienced teacher of French and Boys' Games required from 64qfombe 1987 Scale 8 post.

Application forms and further details are available from the Headteacher (S. A. E. Glesse).

185d2

**ISLE OF WIGHT**  
**BISHOP LDVETT CE MIDDLE**  
**SCHOOL**  
East, Isle Wight, WRO3

**KENT**

COUNTY COUNCIL  
COUNTY DEPARTMENT  
NORTH KENT AREA  
CLIFFS OF THE OCEAN  
SCICOL  
Cliff Road, Cliffs Woods  
Cliffs, Rochester ME8 8UJ  
9-35; Rolli 400

Group 3  
from September 1987  
School year leader  
group. Middle school ex-  
pectation please a  
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Contact Headmaster  
 further details and application  
 form (Tel: Midway 106  
 281008. Closing date:  
 April 1987. 35908) 198

**Scale 1 Posts**

**BEDFORDSHIRE**  
EDUCATION SERVICE  
LINSEAR MIDDLE SCHOOL  
Houghton Regis, Beds.  
Tel: 863284

tags. Application forms available from and returnable to Headmaster, S.A.E. place As Equal Opportunity Employer. (30337) 12

**Edmundsbury**  
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**County Council**

**ISLE OF WIGHT**  
**BRISLOP LOVETT CEMIDDL**  
**SCHOOL**  
 Appleby Road, Ityde, IW PO3  
 INE  
 Age range 9-13 years  
 891 on roll  
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**Scale 1 Posts**

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**BEDFORDSHIRE**  
**EDUCATION SERVICE**  
**LINSEAR MIDDLE SCHOOL**  
Houghton Road, Beds.  
Tel: 863284

Required for the Summer Term 18A7 to cover maternity leave, a first year teacher (18+) to cover all jobs. Scale 1. An ability to teach elementary French. Music would be an edge.

Edmundsbury  
Ipswich  
Aided Middle School  
Bury St Edmunds,

**3 1YB**  
**3 Number on roll: 480**  
**vertisement**  
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# Suffolk County Council

# Suffolk County Council



## CORNWALL EDUCATION COMMITTEE

There is a Removal Expenses Scheme for teachers taking up permanent appointments from outside the County.

### SECONDARY SCHOOLS Comprehensive Headship Callington School, Launceston Road, Callington, Cornwall PL17 7BT. Group 11. NOR 1190. Sixth Form Of 100.

Applications are invited from suitable qualified teachers for the Headship of the above school.

It is anticipated that there will be 1143 pupils on roll in September 1987, including 102 in the Sixth Form.

The post will be available from 1st September 1987 following Retirement of the present Head.

Applications forms and further details on receipt of SAE, (Foods) from The Secretary for Education (Schools Section), County Hall, Truro, Cornwall TR1 3BA.

Closing date Friday 27th March 1987.

### Mullion School, Meaver Road, Mullion, Helson, Cornwall TR12 7EB. Group 8. NOR 480.

#### Mathematics: Scale 1

Required from September 1987. A well qualified teacher of Mathematics to assist in the development of this subject in this purpose-built Comprehensive School.

Application forms/further details are available from the Headteacher on receipt of SAE.

### Saltash School, Wearde Road, Saltash, Cornwall PL12 4AY. Group 11. NOR 1290. Sixth Form Of 120.

#### Science: Scale 1

Required for September 1987 on energetic well qualified graduate to offer Biology, Environmental Science and Physics as a member of a first class team teaching girls and boys in excellent specialist facilities.

Application forms/further details are available from the Headteacher on receipt of SAE.

## PRIMARY SCHOOLS

### Primary Headship

#### St Blazey Junior, Church Street, St Blazey, Por, Cornwall PL24 2NG.

Group 3. Available from 1st September 1987.

Closing Date 3rd April 1987.

Application forms and further details are available on receipt of SAE (Foods) from The Secretary for Education (Schools Section), County Hall, Truro, Cornwall TR1 3BA.

## COUNTY MUSIC SERVICE

Required as soon as possible or starting in September 1987, suitably qualified PERIPATETIC INSTRUMENTAL TEACHERS for the following FULL-TIME SCALE 1 POSTS.

### Brass - North Cornwall

To give Brass tuition in Secondary Schools at Wadebridge, Comelford and Bude, and to assist with the development of area wind ensembles.

Applicants should also have a lively interest in supporting curriculum music in Primary and Secondary Schools which, together with opportunities for their own professional development will occupy the remaining two days of the week.

### Double Bass - West Cornwall

To give string bass tuition mainly in West Cornwall Secondary Schools and to assist in the development of bass tuition in the County as a whole. It is desirable that applicants also have a lively interest in supporting curriculum music in Primary and Secondary Schools or plans for the future could involve an element of this type of work.

Further details and application forms available from James Sargent, Senior County Music Adviser, Dolvenia, County Hall, Truro, Cornwall TR1 3BA.

(14908)



**CORNWALL  
COUNTY COUNCIL**

## MIDDLE SCHOOL EDUCATION

continued

### KENT

**EDUCATION DEPARTMENT**  
NORTH KENT AREA  
BRESNAN ST. THOMAS  
CHEVRE MIDDLE SCHOOL  
Dover, Kent  
Kent ME12 2PQ  
Required for September 1987  
Scale 1 teacher for a second  
year class.  
Enthusiastic teacher of  
Numerical Subjects required.  
Please state year of application with  
r.e. and name/address of  
two referees to the Head  
teacher. (35910) 125022

## Secondary Education

### Headships

**BARNESLEY**  
METROPOLITAN BOROUGH  
EDUCATION COMMITTEE  
WOMSWELL HIGH SCHOOL  
Rabbits Road, Wombwell,  
Barnesley  
(11-16 mixed comprehensive  
n.o.r. 1154)  
Required for September  
1987.  
HEADTEACHER Group 18.  
Application forms and  
further details obtainable  
from and returnable to the  
Education Officer, Barnsley  
Council, Barnsley, S70 8BA by  
27th March 1987. (350010  
please). (35581) 130010

### BURKSHIRE

**ST JOSEPH'S R.C.  
SECONDARY SCHOOL**  
Sheepy Hill Lane, Slough SL2  
5BW  
N.O.R. 335  
Applications are invited from  
suitably qualified and experi-  
enced oracles to Roman  
Catholic teachers for the  
Headship (Group 7) of this  
mixed Roman Catholic 1800-  
pupil Aided Secondary School.  
The Headship is a full-time  
post. The salary will be at the  
appropriate level for Group 7  
schools. The successful candi-  
date will be required to take  
up the appointment on 1st  
September 1987.  
Application forms and  
further details obtainable  
from the Education Officer,  
St Joseph's School, Sheepy  
Hill Lane, Slough SL2 5BW  
(0753) 88111. (35118) 130010

## BURY

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BOROUGH OF BURY

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### EDUCATION DEPARTMENT

HEADTEACHER GROUP 101

Required for 1st  
September 1987  
Broadway High School,  
Bury, Greater Manchester  
M9 6DT.  
130010

Application forms and  
further details obtainable  
from and returnable to the  
Director of Education,  
Education Office, Market  
Street, Bury, Greater Man-  
chester, M9 6DT. (0925)  
(Tel: 705 5619) by 27th  
March 1987. (350010  
please). 130010

### HAMPSHIRE

**PRIESTLAND  
COMPREHENSIVE SCHOOL**  
North Street, Pennington,  
Lyngdon, Hampshire  
SO43 8PZ  
HEADTEACHER GROUP 10  
School Salary Scale currently £19,260  
- £20,785  
Required for September 1987.  
Applications to Area Educa-  
tion Officer, Cannon Street,  
Lyngdon, Hampshire, enclosing  
a.c. for further details and  
application forms. Closing date  
20th March. This is a re-adver-  
tised post. Suitable applicants  
will automatically be considered.  
The County Council pursues  
policy of equality of oppor-  
tunity. Applications from  
persons with disabilities  
(44588) 130010

### HERTFORDSHIRE

**HILLSIDE UPPER SCHOOL**  
Hillside Avenue, Boreham  
Wood, Herts  
No. on roll: 418 (15 to 191)

Applications are invited  
from suitably qualified  
teachers for the Headship of  
this Group 10 mixed affi-  
liated school from Septem-  
ber 1987.

Removal expenses of up  
to £4,000 are payable in  
approved cases and a mort-  
gage subsidy scheme is also  
in operation.

Further details and ap-  
plication forms from: The  
Divisional Education Officer,  
Hillside Avenue, Boreham  
Wood, Herts. (44721) 130010  
please. (44721) 130010

## ST. GEORGES SCHOOL, Shernhall Street, London E17 Required for September 1987

### Headteacher Group 10

(plus Outer London Allowance) required in this  
Catholic comprehensive school for pupils aged  
11-18 years.

The Secretary of State has approved the establishment of a  
new Roman Catholic Secondary School in the London  
Borough of Waltham Forest. St. Georges will be a 16, 11 to 18  
school operating on the site of Corpus Christi High School  
(11-14) and Cardinal Wiseman Senior High School (14-18).  
These two schools will close as St. Georges opens, on 1 Sep-  
tember 1988.

The Governors seek a practising Catholic teacher with the  
appropriate qualifications, experience and personal qualities to  
lead the new school at a time of rapid development in second-  
ary education.

Waltham Forest is a multi-racial area and the Governors are  
anxious to ensure this is reflected in their workforce. They  
welcome applications from people regardless of ethnic origin,  
sex or disability.

To assist in recruitment of teachers to this Authority a play-  
group has been opened for 5 days a week during term-time  
from 8.30 a.m. - 4.30 p.m. providing for teachers children  
from 3-5 years of age.

Application form and further details available from Chief Edu-  
cation Officer, Municipal Offices, High Road, Leyton, London  
E15 5DJ.

Closing date: 27 March 1987

### AN EQUAL OPPORTUNITY EMPLOYER

Applicants are considered for their  
suitability for the post regardless of  
disability, sex, race and marital status.



## HEADTEACHER

Required for September 1987, for the fol-  
lowing **GRAMMAR SCHOOL**, which is  
one of the eight **SELECTIVE SCHOOLS** in  
Essex.

**Colchester County High School for Girls**  
(Group 10) Norman Way, Off Lexden  
Road, Colchester.

This Day School has a roll of 650 pupils  
aged 11-18 years with a sixth form of 180.  
Generous relocation allowances payable  
in appropriate cases.

Application form and details from  
County Education Officer, P.O. Box 47,  
Threadneedle House, Market Road,  
Chelmsford, Essex. CM1 1LD.  
Closing date: extended to 31st March  
1987.



## Education Department

### Headteacher

**Queen Anne School (Group 9) Queen  
Anne's Road, York, YO3 7AA.**

11-16 Mixed Comprehensive, currently with  
about 690 on roll.

Suitably qualified and experienced candidate  
required for this appointment from January  
1988.

Application forms and further details  
(s.a.e. please) from the County Education  
Officer, Room 523, County Hall, Northallerton,  
DL7 8AE to be returned by 23rd  
March, 1987.



## EDUCATION DEPARTMENT NORTH WEST KENT AREA

**Dartford West Secondary School for  
Girls, Heath Lane, Dartford, Kent.**

### APPOINTMENT OF HEADTEACHER (GROUP 9)

This is a non-selective school for girls aged 11-17. The school is  
situated in a pleasant area of central Dartford, and is consistently  
over subscribed. There are 630 pupils on roll.

This vacancy arises because of the retirement of the present post  
holder. A well qualified and experienced graduate teacher is  
sought to lead the school.

Applications and further details available from the Area  
Education Officer, 132 Windmill Street, Gravesend, Kent  
DA12 1BE, to whom they should be returned by 30.3.87.

The Authority operates a disturbance allowance scheme.

Possibility of help with temporary housing in approved cases.



## HEADSHIP

**Chipping Sodbury Secondary School, Bowling Road,  
Chipping Sodbury, Bristol, BS17 6EW**

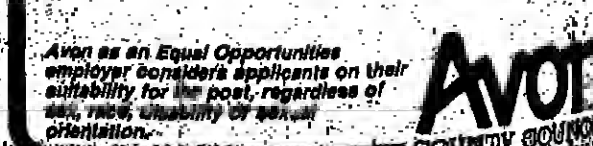
Applications are invited for the Headship of this school.

Salary in accordance with Group 11

Vacancy from 1st September 1987

Stamped addressed envelope for further information and  
application form (returnable by 27th March 1987) from the  
Director of Education, Aven House North, PO Box 97, St  
James Barton, Bristol, BS99 7EB

Education Department



# Computers in Education

A curriculum rich in computer sciences and technology? Kenneth Baker talks to The TES  
about his vision of City Technology Colleges



## Centres of excellence

Government plans to create a  
new generation of compu-  
ter-literate children have  
come under scathing attack  
from both the educational establish-  
ment and the information technology  
(IT) industry.

Last October, the Secretary of State  
for Education, Mr Kenneth Baker,  
launched the City Technology Col-  
leges scheme which calls for 20 CTCs  
to be established in deprived areas of  
England. The new colleges - for 11 to  
18-year-olds - will provide a curricu-  
lum rich in computer sciences and  
technology in an attempt to boost the  
numbers of new IT workers available  
in Britain by the year 2,000.

The unusual aspect of the plan is that  
the government is asking private busi-  
ness to donate £1m to establish each  
college and all that is offered in return  
is an increased chance for the com-  
panies to recruit suitably-qualified  
school-leavers.

But many computer companies have  
rejected the Secretary of State's plea  
for help, and companies such as DEC

and IBM are already making it clear  
that they wish to support the existing  
educational system rather than CTCs.

"DEC have told me that they feel  
they are already doing enough in the  
existing educational system," Mr Baker  
admits. "But I am getting strong  
support from other sectors of industry  
right across the board. I have had  
firm offers of help from service indus-  
tries, traditional industries and the  
construction industry. A couple of  
firms have even said they may put  
money on the table before the elec-  
tion, and I think we will be able to open  
the first two colleges by September  
1988."

But Mr Baker has yet to quell the  
storm of protest building up within the  
local education authorities. Their main  
concern is that once again the govern-  
ment is attempting to shift the blame  
for an increased demand for the com-  
puter industry onto the general popula-  
tion and promote the old view of elitist  
schooling.

"There's nothing wrong with creat-  
ing centres of excellence," Mr Baker  
insists. "There will have to be some

### RAY HAMMOND

form of aptitude testing for the chil-  
dren who are to enter these colleges as  
we want children who have a particular  
aptitude for technology, but we don't  
want schools to be selective in the way  
that grammar schools are."

The main practical problem to the  
scheme pointed out by the teaching  
profession is that existing secondary  
schools already suffer from a drastic  
shortage of experienced teachers of  
computer science, maths, physics and  
other technology subjects. Local  
education authorities see the potential  
for a devastating brain drain away  
from state comprehensives as the best  
teachers opt to move across to the new  
colleges where their subjects will be  
treated with reverence. Baker has a  
radical idea for combating this  
problem.

"I think the new City Technology  
Colleges are going to act like a magnet  
and draw thousands of thousands of  
teachers out of retirement or out of

only retirement," he suggests. "I've  
had many letters from teachers, espe-  
cially those who have worked in inner  
city areas, and they tell me that this  
is the sort of thing that they would be  
prepared to come back to teaching to  
do. It's the system that's been letting  
them down. In addition, last year,  
there were more new students entering  
training to teach subjects such as maths  
and physics and I'm confident there  
won't be a problem with a drain away  
of talent from existing schools."

Mr Baker does not explain how  
newly-qualified teachers and those  
returning from retirement can be ex-  
pected to offer the cutting-edge tech-  
nological education which is the ethos  
of the CTC scheme, but he remains  
bullish about the concept.

"What I want to do is to provide  
parents with a half-way house choice in  
education. There are many parents  
who would like to send their children  
to private schools but who are unable  
to afford it. The City Technology  
Colleges will provide a much-needed  
alternative."

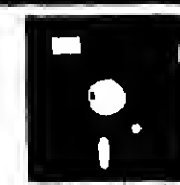
The Department of Education and  
Science makes it clear that, although it  
will be supplying the annual running  
costs of the new colleges after private  
enterprise has supplied part of the  
start-up capital, there will not be a  
resultant reduction in the amount of  
financial support offered to existing  
maintained schools.

The DES expects all 20 colleges to  
be open by 1990. Northern sites sug-  
gested include Newcastle, Middlesbor-  
ough, Hull, Leeds, Bradford, Coven-  
try, Manchester and Liverpool and in  
the south the cities of Bristol, Plym-  
outh, Portsmouth and Southampton  
have been selected. London sites car-  
marked for consideration include  
North Peckham, Notting Hill, Hack-  
ney and Newham.

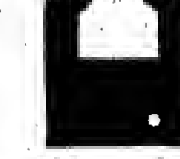
"I want to ensure that the intake for  
these colleges is representative of all  
social classes," Mr Baker says. "But I  
will be looking for an element of  
parental involvement. We will require  
parents to agree to the idea of their  
children staying in full-time education  
until they are at least 18."

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Service and this co-operative approach will increasingly  
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in-service provision operative from this year.

Application forms and further details, including  
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Hall, Shirefield Park, Reading RG2 6XE.

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TES 3/87

# EXTRA

Educational computing has lost its way

## Blind alley

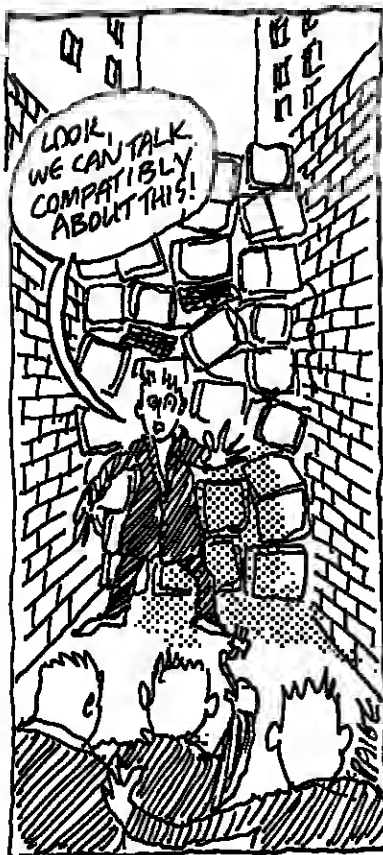
Educational computing in Britain has lost its way. The government's record of intervention in the hardware marketplace, combined with changes of direction over funding of support organizations, has left a legacy from which neither the current generation of school children nor the UK software industry may easily recover. The decision to axe the Microelectronics Education Programme was followed by a long hiatus before the half-budget Microelectronics Education Support Unit was even established. MESU has yet to make any serious impact on the uncertainty and confusion.

Meanwhile I.C.S.s are grappling with hardware decisions that will determine the school experience of computing in the Nineties. They cannot buy BBC Model Bs; some are reluctantly buying Masters, others are tempted by the performance of the RM Nimbus while worrying about its imperfect compatibility with IBM. The Apple Macintosh is attractive, especially for those who see the possibilities of desktop publishing (see page 59). But Amstrad and other low-price IBM clones offer a safe bet, albeit based on technology that is already old-fashioned, if not actually obsolescent. The IBM PC was first based on a hybrid processor that's partly 8-bit, partly 16-bit.

Already, true 32-bit MS DOS compatible machines with megabytes of main memory are emerging, claiming speed increases of 1,000 per cent over the IBM AT. Twenty megabyte hard discs are becoming commonplace, and 40 or even 130 megabyte optional extras. Local education authorities are understandably nervous of jumping straight into the 32-bit world with no obvious sources of educational software, nor any easy means of transfer for all that BBC software. Education is already paying the price of being locked into non-standard hardware, and a proprietary operating system. A single country is too small to support a thriving educational software market, and it is economically disastrous to be cut off from the export market and the business world of MS DOS.

I.C.S.s' tasks have been complicated by a series of own goals from Acorn. It discontinued the Model B while it was still in high demand. They produced a series of expensive and half-baked upgrades that the market didn't want and which weren't quite compatible. Instead of supporting the Model B and reducing its price, The 1986 launch of the Master 128 delivered the old technology at a new price without quite achieving compatibility at either end of the range. It alienated many small firms who market BBC peripherals and add-ons by in effect creating changes ranging from minor amendments to a total rewrite or even product redesign. The Master 128 confused its market by claiming to have 128K of RAM when most people using ordinary software can in effect only use 32K at a time.

It has even made a mess of such technical improvements as the Master offered. Cartridge loading for ROMs might have been popular, had it not been for a cartridge-holder which must surely deserve an award for bad design. Providing an advanced disc filing system (ADFS) could have been a welcome step forward, had they pro-



JACQUETTA MEGARRY

vided a tolerable method of transferring files from the existing DFS format and throw in at least a single disc drive. Even the ability to set up fixed starting conditions was spoiled by defective battery packs, an unfriendly system for setting the options, and no provision for a teacher to protect the settings from mischievous fingers.

In overdue response to criticism of the amount of desktop space taken up by its systems, Acorn finally produced the Master Compact. This is a cut-down but scarcely cut-price Master with many incompatibilities: 3.5-inch discs demand suitable equipment and lots of time if you want to copy from standard floppy discs on to them. Only a fraction of the Model B's wealth of software is available in 3.5-inch format, and both copyright and the new 1772 disc controller chip make difficulties for anyone who wants to copy.

The fact that there's no cassette port doesn't help schools with commercial software on cassette, and the omission of the standard disc filing system leads to further problems. The Econet interface is an optional extra, and the network won't work correctly unless you have ANPS (Advanced Network Filing System) version 4.23 or later. Both disc and printer connections have been changed, and you cannot connect it to a colour television without buying an RF modulator. For schools with Model Bs and 3.5-inch disc drives, then, the Compact means a nightmare of incompatibilities.

The result of all this tinkering is that in 1987 the BBC series of micros is obsolescent, overpriced, underpowered. The Master 128 isn't fully compatible with either the Model B or the Compact, and the Master 512 isn't compatible with the IBM PC. The

financial crisis and Olivetti rescue only widened a credibility gap that was already yawning. For too long, Acorn has taken the education market for granted, assuming it to be captive because of the large supply of educational software, the number of teachers that have painfully acquired some familiarity with BBC software, and the belief that there are too many of them around in schools and colleges to write off.

But, as Kenneth Baker admits, British secondary schools have only one micro for every 60 children. No wonder only 20 per cent of head teachers think that computing has made a significant contribution to teaching. To achieve anything serious, computers must be integrated into the mainstream of education, which means an immediate expansion to ratios more like one per 10 secondary pupils and one per 20 primary. That means multiplying the number of systems by six.

Originally, the BBC and Acorn collaborated to produce an educational micro and the DTL, by endorsing it, made it a *de facto* standard. At the time, this looked like an avenue for progress. It now looks more like a blind alley. The launch of the IBM PC changed the micro scene irrevocably. The Amstrad-led price revolution has reinforced that change and underlined how uncompetitive the Acorn products are. The "stick them high, sell them cheap" philosophy could bring prices within reach of a sensible level of classroom provision. And the only standard the real world recognizes is IBM compatibility.

There have been moves at a European level to agree a standard educational system, and this could not only help to develop a viable software market but also improve the mobility of computer professionals and the credibility of school computing. Olivetti is keen on IBM compatibility, but Acorn is arguing for its proprietary RISC machine, while Philips (Netherlands) and Thomson (France) want to base the system on the Motorola 68000 family.

For many educational purposes the speed of the processor and the size of the memory may be irrelevant. Its primary schools an obsolescent micro may actually be preferable to a leading-edge system. But secondary pupils need to gain familiarity with the operation of modern commercial software such as programmable databases, high-powered spreadsheets, page-making software and searching CD-ROMs - all of which is made difficult or impossible within the constraints of the BBC's outmoded technology.

Secondary education needs standardized 16-bit systems that are reliable and easy to transport, simple to use. It may be that the era of the single, all-purpose work horse is over, and that, at least in secondary schools, computing is moving towards dedicated machines for different purposes. As a result, the need for desktop publishing, CAD/CAM, control, modelling, etc., will have to become dramatically easier to use and employ standardized operating environments which are the same on any computer. Otherwise education will never catch up with the need to train all those teachers in all those different systems.

## Pot-pourri

Proceedings of the 1986 MUSE Summer Course Part II 23  
MUSE Report No. 10, PO Box 43,  
Houghton-on-the-Hill, Leics LE17 9GX

This booklet is a curious mixture: its first half is a pot-pourri of short reports carried over from Part I, followed by an extended article on the place of information technology in the secondary curriculum. There may be people who want to read over 15,000 words on the latter, but they are a different group from those who want to complete the coverage of the MUSE conference begun in Part I. I suspect both groups would have been better served by a more logical division between the two publications.

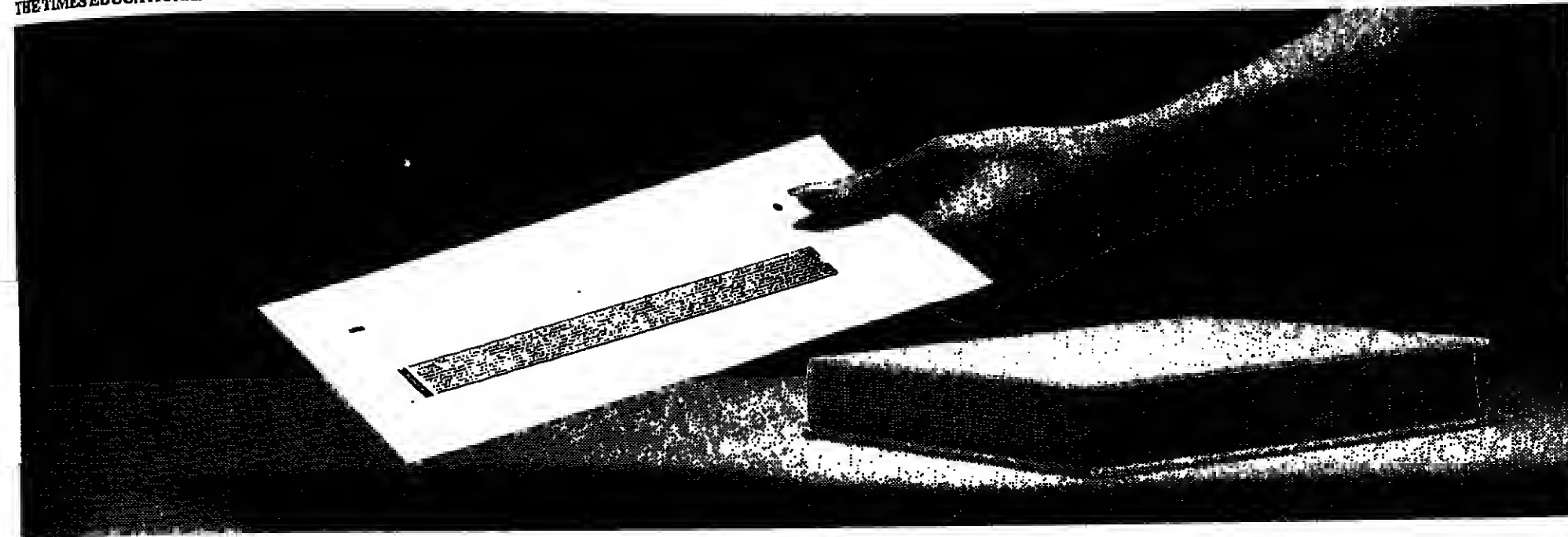
Two summaries refer to Research Machines' networked Macintosh. Neave discusses comparative computer studies in primary schools and networked sys-

tems, and also compares implications for software access. He suggests that a well-used network needs a minimum of three 10MB a week "touching" time" and demonstrated Access, a friendly front-end that shields the user from having to cope with remembering codes, commands and filenames. Pat Harbath's session reported teaching troubles with a Nimbus network in a Sevenage school.

The summary of Jon and Rosalind Nichols' work with PROLOG is disappointing: apart from the chronology this does little more than headline the areas where important work has been done. Yet Ros Nichols' achievements with pupils who have special learning difficulties deserve more than half a sentence. Andy Terry's report on

telesoftware and Project Education fares better, as do two presentations on word processing (with *Wordwise* and *Wordwise Plus*). But the overall impression is of inconsistent report allocation and an uneven standard of reporting.

Jan Blumenthal's paper covers some important debates, even if it is a little lengthy. He points out the convergence between technologies for storing data, text, image and video, and singles out interactive video as covering a wide range of data types. Oddly, he doesn't mention compact disc media (CD-ROM). He argues that learning about information technology should be developed in the curriculum. Learning with IT, he helps to shift the teacher's role from spectator to participant and creator. The technique can be grasped in a couple of minutes.



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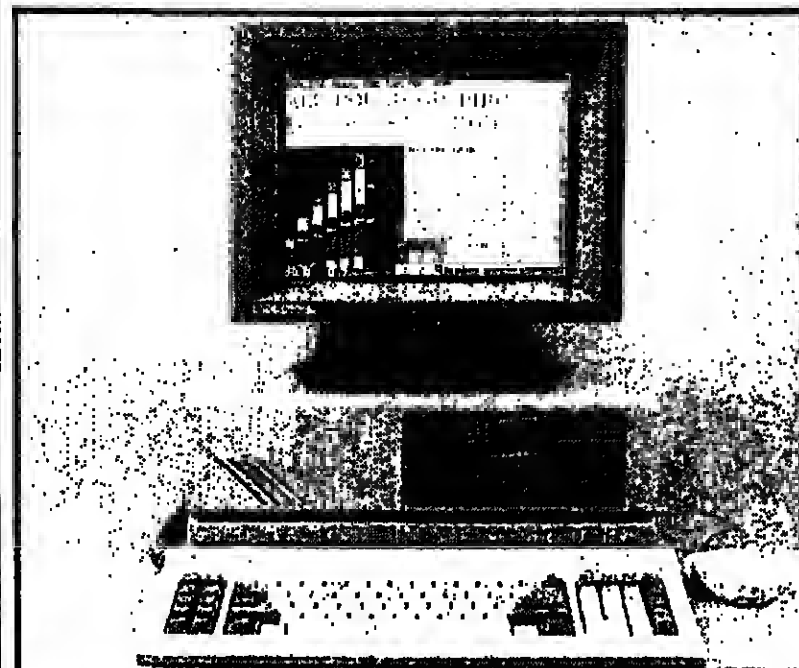
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EXTRA

## The technicalities



## Number crunchers

GEORGE ROBINSON

Research Machines, the most successful manufacturers of educational micros, have launched two new series of powerful computers suitable for secondary schools and further education. In addition, the company has re-affirmed its longstanding commitment to schools by introducing an enhanced version of its best-selling Nimbus PC 186 micro.

The new ranges, called the RM Nimbus AX 286 and VX 386, utilize the powerful Intel 80286 and super-fast 80386 microprocessors to offer users very powerful computer facilities in low-cost packages.

Almost alone among British micro-computer makers, RM (as the company now chooses to be known) has maintained growth and profitability

during the past three years when many other manufacturers have faced profit slumps or have been forced out of business. One of RM's strengths has been the development of networks and, with 40,000 systems supplied to schools, polytechnics and universities, the company now has one of the largest installed network bases of any computer company in the world.

RM have been careful to ensure that the new machines offer full compatibility with the existing Nimbus PC 186 range and it is for this reason that many secondary schools will be interested to up-grading to either the new PC 186 or to the more powerful models. All of the software which has been developed for the existing Nimbus machines will run on the new models. In addition,

the re-styled Nimbus PC 186 now includes IBM PC emulation, support for interactive video and the ability to run much of the BBC BASIC and IBM PC software. This effectively offers schools the ability to use the computer in the IBM, BBC and RM software environments.

The AX and VX machines will be of interest to secondary school maths and physics departments where there is the need for high number-crunching ability or for extensive networks. The AX 286 micro is IBM AT compatible and, with the 286 microprocessor running at 12MHz, it offers one megabyte of RAM as standard. The provision of a special on-board expansion slot allows users of the 286 to up-grade to 386 specification at a later date if required.

The advanced VX 386 micro runs the 32-bit 386 microprocessor at 16MHz and, in basic format, the machine is offered with two megabytes of RAM. In addition an 80387 maths co-processor and cache memory is available to enhance high-speed performance even further. In its most advanced configuration, the 386 machine becomes a powerful workstation capable of emulating mini-computer performance.

All of the new models are supplied with 5.25inch floppy disc drives and offer hard disc options as well as six expansion slots for additional circuit boards and a mouse interface.

The new machines all support the existing RM network as supplied by the company, but they are also able to operate on the increasingly dominant Ethernet and Token Ring local area networks. All systems are supplied with MS DOS 3.2 and Microsoft Windows software and Xenix is available as an option.

For graphics use, including the increasingly important desktop publishing application, the new AX and VX machines offer standard support for EGA, Hercules and MDA graphics standards and the enhanced EGA 640 x 480 screen pixel mode can be supported. This latest specification is now emerging as an industry standard and supplies square pixels which are especially useful for desktop publishing applications. In this mode up to 37 per cent more data is available on screen than in conventional graphics.

Price indications for the new series are £1,795 for a disc-less network station, £2,695 for an AX 286 with a 20 megabyte hard disc and £4,995 for a VX 386 with a 40 megabyte hard disc. The first batch of machines will be available in April and volume production begins in June.

RM can be contacted at Research Machines Ltd, Mill Street, Oxford OX2 0BW (tel: 0865 249866) for further information.

## Sir Clive's new micro



## Work horse

Sir Clive Sinclair's new battery-driven portable microcomputer, the Z88, could prove to be an exceptionally useful educational tool. The new machine - unveiled at last month's Which Computer Show - is the size of an A4 page, less than an inch thick and weighs under 2 lbs. Most interestingly, for education, Sir Clive has opted to use BBC BASIC as the machine's built-in programming language.

Were it not for Sir Clive's tarnished reputation, the new portable might be heralded as a real breakthrough, as it seems to combine all the essential computing functions in a very light box for under £230.

The problem is that Sir Clive has specifically chosen to ignore the advice of his PR and marketing consultants and is initially offering the machine to the public via mail order. His new company, Cambridge Computer Ltd, is soliciting pre-paid orders months before he says the machine will be available and Sir Clive has confirmed that he intends to bank his customers' money as it is received.

Two years ago, hundreds of thousands of customers sent mail-order money to Sir Clive's old company, Sinclair Research, for the much-typed Sinclair QL computer and the majority of customers ended up waiting months for machines which, when they arrived, did not meet the promised specification.

"I promise I will be able to deliver this machine in April," Sir Clive said at the launch, answering a jibe that the "88" part of the computer's title was a more realistic forecast of the machine's true availability date. "We haven't quite finished the software," he admitted, "but there will be no problems. If the machine is produced on time and proves to perform as promised, a

large number of school children are likely to find it an ideal work horse. It is the first portable that is really light enough to be carried everywhere and built-in word-processing and spreadsheet software is fully integrated. Other built-in software includes a diary, a simple database, a calculator and a communications program.

Existing BBC Basic programs cannot immediately be ported across to the Z88 as the new machine displays information differently, but third-party software houses are certain to make translation programs available and Sir Clive manages to produce the 10,000 machines a month he has promised. It is likely that by the autumn term many BBC programs will be running on Z88.

The Z88 displays its information on a built-in "cooled" LCD screen with eight lines of 80 characters. The screen can be divided into "windows" and the Z88 can run several tasks at once. Although the machine is based on the old-fashioned Z80 micro-processor, this chip has been supplemented so that it can address up to three megabytes of RAM.

In its basic form the machine is supplied with 32K RAM built in, of which only 15K is available for use (this will store about eight A4 pages of text). Cambridge Computer are offering add-on 32K and 128K RAM cartridges as soon as the machine is available and Sir Clive says that later in the year one-megabyte cartridges will be offered. Cables for printer connection and for reading IBM-style disc drives will also be offered with the machine.

Further details and mail-order forms are available from Cambridge Computer Ltd, FREEPOST, Cambridge CB4 1BR.

## Pass word please

JACQUETTA MEGARRY

The Tandata P.A. Workstation: P.A. 100 (128K memory with 12inch RGB monitor) £1,149 + VAT. Tandata Marketing Ltd, Albert Road North, Malvern, Worcs WR14 2TL.

For all the talk about converging technologies, the bold concept of a single integrated desktop system is still far in the future. Most people who use modern communications tools find their horizontal surfaces a clutter of incompatible devices that won't talk to each other - telephone, disc drive, answering machine, modem, micro-computer etc. Tandata, noted for their modems and Prestel adaptors, produce the PA series of voice/data workstations.

The PA 100 does what it claims to do very well: access to electronic mail couldn't be easier, with a fast built-in modem, simple driven software and a superb monitor as back-up to the LCD display. A couple of key presses after switch-on are enough to make the system call the BT Gou computer and send all those awful NUI and ADD codes automatically; you see this on TV, hear the telephonic activity through the excellent loudspeaker and enter your password.

The PA is very versatile, with built-in firmware covering diary, telephone address book, notepad, calculator and spreadsheet. You can get it in old-fashioned numbers by memo, using a hands-off telephone; it plugs into any modern-style phone socket. Deeds and the keyboard from the monitor and you have a lap-held micro - 128K of battery-backed RAM is standard, the 256K model costs £150 extra, and a further 256K costs £229.

However, the system isn't intended for serious word processing, as the facilities are very limited. The lack of word-wrap seems primitive, and a four-figure price I'd expect better of the "documention" photo-reduced dot-matrix output without an inkjet. For IBM PC users, a £19 disc and cable kit overcomes the Achilles heel - lack of a disc drive - by allowing error of a disc drive - by allowing error of a disc drive - by allowing error of a disc drive. Without this, you can archive only on audio cassette. There's a cheaper version, the PA 80 at £999, with 64K memory, no floppy (so you can monitor calls but not participate) and much less software; it's intended for front office use. But at least it's a machine that can be used intelligently to improve productivity. It's a good idea, and a good machine. Roll on the day after tomorrow.

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EXTRA

## A 'snapshot' of the current use of computers in secondary education

The "Skills for the Future" project was launched at the University of Sheffield in April 1986 with financial support from the Manpower Services Commission. The general aim was to examine the links between education and employment in the field of information technology. One of the subsidiary aims was to gain an overview of existing provision in computer education in secondary schools.

The project team decided to use two methods in gathering information on computer use in secondary schools. The first involved visiting a small sample of schools across the country, some of which were involved in the Technical and Vocational Education Initiative. It was then decided to follow up some of the issues emerging from these "case studies" by using a questionnaire to be distributed to a much larger sample. For a number of reasons (mainly time, money and ease of distribution) The Times Network for Schools (TNS) was chosen for carrying out the survey by electronic mail.

The questionnaire was sent to all the secondary schools that subscribe to TNS, which is just over 1,000 in England, Wales and Scotland. This cannot be regarded as a simple random sample, since those subscribing to TNS and responding to our questionnaire are more likely to be "computer oriented" schools, having more computer facilities and using them in various curriculum areas. The results of the survey, therefore, can probably be seen as representative of the most computer-orientated schools in the country. As such they give an idea of the maximum levels of IT involvement in schools.

Schools were asked to provide the following kinds of information about their resources, their courses, their support, and their approach to IT in the curriculum:

- Basic information on the school itself
- Details of hardware: number and type of computers, networks (if any), distribution of computers, details of peripherals
- Staff support for IT: teaching staff, non-teaching assistance (if any) of different kinds
- Courses offered to pupils in computing, eg computer awareness, computer studies
- School courses and curriculum areas using computer assisted learning (CAL) or IT in any way.

The questionnaire was designed so that this basic information could be supplied as easily as possible. In addition, the final part allowed schools to describe in their own words any aspects of computer use in the classroom that had not been adequately covered. A large number of the schools provided much interesting information in this open section.

A vast amount of information on computer education was collected by means of the "electronic questionnaire". An encouraging response was received, with many schools taking the time and effort to explain at length their own approach to computer education. The main points which emerged are summarized below (a full account will be published later in the year).

## Computer study

JERRY WELLINGTON

encouraging response was received, with many schools taking the time and effort to explain at length their own approach to computer education. The main points which emerged are summarized below (a full account will be published later in the year).

## RESOURCES

Schools were asked to give information on the number, type and location of all their computers. The BBC Micro still dominates the school market, with 84 per cent of all computers coming from this source. Commodore and Research Machines (RM) come a very distant second, with only 10 per cent of the total between them.

The average number of computers per school was 23, but this varied considerably (between four and 63) according to school size, degree of computer orientation and availability of funds, most notably in the form of TVEI support. The ratio of number of computers in a school to the number of

pupils varied enormously. The average number of pupils per computer was 44. For TVEI schools, however, the average was only 26, compared with 47 for non-TVEI schools. The pupil:computer ratio varied considerably from 7:1 in one school to 14:1 in the "worst" case.

The lack of sufficient hardware in schools is seen by teachers as a significant impediment to the spread of computer education across the curriculum. However, the survey clearly indicates two other factors restricting the diffusion of computer education throughout schools. The first concerns the distribution and organization of hardware. The second involves staff support.

## ORGANIZATION

More than two-thirds of all computers in schools are located in designated computer "laboratories" or computer rooms. The remainder appear to be sited in a variety of departments

around schools with business studies and science the most common, but even in these two areas the numbers involved are very small.

The fact that the bulk of secondary school hardware is located in computer rooms or "laboratories" must present a serious impediment to the widespread use of computer assisted learning in subjects such as modern languages and even mathematics departments where less than three per cent of all computers in our survey were located.

A further impediment to the diffusion of CAL is the use of networking. Our survey indicates clearly that the networking of micros within computer rooms is closely related to the absence of computer assisted learning in a number of subjects. In other words, schools with networking facilities are less likely to be using CAL across the curriculum.

This finding is particularly interesting in the light of the fact that "networked" schools tend to have considerably more computers. However, the computers in "networked" schools are more clustered in computing laboratories, on average 17 as opposed to 11 in non-networked schools.

No explanation is offered here to account for these effects. This is an area that merits detailed study, particularly in view of the expenditure involved. It may be the case that the human element is the key factor: the clustering of computers in dedicated "laboratories" is discouraging enough for some teachers who may have to drag a class across the school to involve them in a computer related activity. But familiarity with the operation of a network, often seen as the realm of the "school expert", may be perceived by many others as the final barrier.

## SUPPORT

All schools were asked to outline the assistance given to teachers by either non-teaching staff or pupils. By far the most common non-teaching assistance provided came from pupils - it seems that pupils are widely used for altering programs, copying discs, helping with networks, maintaining software libraries and many other tasks. There were very few schools with technicians having responsibility for IT, although some science technicians are used in this area. In all, just over two thirds of schools responding reported that they had no dedicated help in computer education, whereas a further third

Analysis of the results of our survey shows that schools with technical assistance in computing had a larger average number of subjects using CAL regularly (2.5 subjects) than schools without technical assistance (1.7 subjects). These results give a clear indication that the use of computers across the curriculum is enhanced by the presence of non-teaching assistance.

## COURSES

Ninety-one per cent of the schools were providing examination courses with an essential computer element (eg computer science, computer studies). Seventy-eight per cent of these were providing computer studies courses specifically for O/CSE exams.

Eighty-nine per cent of the schools ran non-examination courses incorporating an essential computer element. Seventy-two per cent of these ran computer awareness/applications appreciation courses, often for lower down the school - almost half of these courses were in Year 1.

## CAL

The presence of computer assisted learning (CAL) and some of the possible barriers to its spread into a range of school subjects have already been mentioned. One interesting aspect of the survey was the extent to which CAL is used in schools, in which age groups, and in which subjects. Two-thirds of all schools reported that CAL was being used in subject teaching.

Interestingly, CAL was most commonly used in Year 1, particularly for pupils with special needs. Higher up the school, science and mathematics were the most common users of CAL with CDT a close third. The use of CAL in all subjects dropped off dramatically in Year 5 - possible explanations of this effect are left to the reader.

The results reported above are brief summaries of the vast amount of information collected from answers to specific questions. In addition, a large number of schools made general remarks on their approach to computer education. Two general trends are clearly visible in their replies.

The first was a desire to move away from examination courses in computing towards more widespread use of CAL across the curriculum. However, to many schools, one of the greatest restrictions on the growth of CAL is the availability of hardware.

"Computer equipment is used almost all the time. When not used for computing examination work other departments grab any available time."

"As all machines (except one) are in the computer studies room which is used for 32-40 periods, there is little scope at the moment for CAL."

As a result, some schools are reluctant to use CAL in other subjects. The only way to encourage CAL was to drop examination courses in computing.

"We are dropping computer studies as an examinable subject, concentrating on IT, with a firm commitment to spread IT across the curriculum."

The latter comment indicates a second trend. Use of the term "information technology" (IT) and the presence of courses in IT rather than, say, computer studies or computer awareness appears to be increasing.

The prime purpose of this survey has been to bring out the main points emerging from the survey in order to raise general issues. It would be foolish to claim that hard and fast generalizations can be made from a survey such as this which could be applied to the whole of secondary computer education. However, two key points emerge which could provide pointers in planning for the future.

First, there are a number of barriers to the widespread use of computers across the secondary curriculum. These include the shortage of hardware, the organization and distribution of computers, the lack of non-teaching assistance, and the shortage of examination courses in computing. Second, the use of an "information technology" of this nature can be valuable in providing an overview or snapshot of the current use of computers in secondary education, so long as its limitations are not forgotten.

EXTRA

The situation in primary schools  
Where is the help?

DAVID MARSHALL

According to Kenneth Baker, and he said this with pride at the opening of the Hi-Tech Exhibition in January, there is one computer for every 120 primary school children in England and Wales. (The figure is one in 60 for secondary schools). As the average primary school has about 200 children on roll, that means one and two-thirds micros per school - for argument's sake, I'll allow two. And this is wonderful!

After more than three years of MEP (the Microelectronics Education Programme), four years of MAPE (Micros and Primary Education), several Department of Trade and Industry offers of various hardware, and massive state publicity, we are still trying to devise a syllabus based on access to a computer one day a week. What's more, at least 10 primary schools have 10 or more micros, so there must be many that have none at all.

An average primary school will be about 25 years old and on two levels, which means it was built pre-micro-electronics. The corridors and doorways are too narrow and awkward for a micro trolley. The classrooms have only one power point - usually badly positioned. This makes immediate access to a micro very difficult and has discouraged many teachers altogether.

Those teachers with greater experience often see the benefits that a micro can bring and take them to their children with zeal, but the provision in universities and polytechnics for new entrants to the profession to acquire a thorough knowledge of micros and primary software is only just better than lamentable.

Over 30 per cent of primary schools in this country have four or less teachers. For two of them to attend the necessary in-service training sessions to qualify for a micro must have been difficult, and to persist and realize the machine's potential well-nigh impossible. The subjects expected to be taught

by those in authority are many and various. Also many teachers have been working to rule, at least, for the last year or more. So was it ever reasonable to expect teachers under these pressures to take a micro on board with anything less than reserve?

The average school above will have spent around £150 on software over the last two or three years. So if the way in which micros were introduced into primary schools has made us the envy of others abroad, then how much more must the countless number of software programs available for our primary schools. But there are too many and their complexity and variety are bewildering.

The best-selling items of software have sold around 10,000 copies in total. That sounds good but when you consider that there are 30,000 primary/middle schools, what are the other two-thirds using? One software house spoke to reckons on selling 1,000 to 1,400 copies in order to set its prices. If they sold more, then they had a bonus to produce more material in the future.

With the drive to introduce a micro fast disappearing, and belts still being tightened, who is buying software? If you have only £150 in your school to spend, to choose the best or most appropriate is a nightmare, and where is the help now that MEP has gone?

Preteel offers a lot of good advice and The Times Network for Schools (TNS) database is improving daily. But unfortunately Gordon Jones, Director of TNS, some I.e.s.s. have deliberately chosen not to use the necessary modems in primary schools.

One of the best relics from the days of MEP is the RESOURCE software stable. This organization, which continues to release superb programs, is

sponsored by the I.e.s.s. of Sheffield, Samsley, Doocaster and Humberstone. These four authorities use support teachers to go around providing help and guidance in schools - an idea slowly gaining ground elsewhere. Staffordshire has 11 such teachers and a centre in Stoke, East Sussex has five and a centre in Brighton - both organizations work well. It is disturbing, though, that so few authorities recognize the usefulness of the advisory teacher, and without the backing of the Education Committee, they will not get the financial resources. There are other examples of good I.e.s.s. but the political will has to come from above - you need the money, and a figurehead or two helps.

It is not gloomy, however. There are schools where the children have immediate access to a micro when appropriate. History can come alive as they answer questions as a Norman or a Viking, or act as navigator on a medieval ship, or discover Egyptian artefacts. Mathematical insights can be gained thanks to *Spide 1* and *2*, or *Shimmer 1* and *2*. Children can collaborate on a piece of creative writing, constantly improving it, with the help of several simple word processors. Their imaginations can be released by a powerful adventure game. They can "draw" with precision with their hand-held Mouse. When the children's week is over, they can record events on their database, and present them as a newspaper with *Page Maker*, *Fleet Scribe* or *Front Page Extra*. They can even send their work all over the world by electronic mail.

In some places the seeds have really taken root and children are enjoying the many benefits of the micro revolution. However, they are the lucky exceptions. They happen to be in the right place, at the right time.

David Marshall is head teacher of Rochdale CP School and a regular adviser for Computers in Education for East Sussex.

## Networking - a possible solution

## The way forward

DAVID PLAYFOOT

Not so long ago we were all lugging our micros into the teachers' centre to be compulsorily in-serviced into the systems of the computer; that surge of interest, buoyed up by hard cash from central government, involved all teachers in the newest area of the curriculum. The future of the micro in primary schools seemed assured.

After the initial excitement we began to discover the problems. First, the hardware itself and the problems loading the cassette recorder. Then there was the software; often dull, frequently inappropriate, and graphically uninspired. And when you found the program you really wanted it probably didn't work on your micro or it was too expensive.

The disc drive was a giant leap forward for classroom teachers and their pupils. To try and develop computer studies with two micros relying on cassette recorders can be done, but it's not easy. Floppy discs have been their own problems, though. They get lost, cost a lot of money and can be inaccessible once loaded. Although the software houses have improved their documentation, the computer companies themselves and the contributors to educational computing magazines still produce what is a foreign language to most teachers.

There is nothing more off-putting than loading a program only to find you have a cursor and some indecipherable numbers and letters across the bottom of the screen.

Some I.e.s.s. have now set up advisory teams and given relatively general training to the whole area, but this has been only partially successful.

Given the impossibility of support going to every school, advisers have tended to work in pieces where staff commitment was high and create a small number of schools which could be used as examples of good practice. These have been the "model schools" where some schools have

sophisticated set-up while others are willing their initials on the dusty vdu.

There seems to be a common feature in the schools where computers are working well: a teacher who is managing the system. In the primary middle school teachers frequently have a curriculum co-ordinating role and a full-time teaching load; the very particular skills needed to manage micros are scarce. There are constraints of time, other priorities, inadequate facilities and general lack of confidence on the part of staff. The management function of the teachers responsible for computers is crucial because they solve the problems and organize the hardware within the wider curriculum.

The difficulty is that even with knowledgeable and enthusiastic teachers the spread of confidence and understanding is limited by all the constraints. One possible answer is the use of networks.

Network systems in primary schools look like being the way forward. A network is any number of computers linked together by cable and connected to a single piece of hardware called a "file server". You put one disc with all your software programs on it into the file server, then all your micros can take whichever programs they want from it.

In terms of school and classroom management primary and middle networking makes sense. It enables one teacher to make available a range of computing options in a very short time and to take away much of the more laborious tasks which hinder classroom teachers.

There are three major areas where networks benefit children's learning: first, the idea of a shared disc which can hold a number of different programs; second, the ability to develop individualized learning paths to the particular school's needs; and third, to

use the shared facility in relation to pre-delivered data, such as booklists, software guides or reference material specific to a particular subject.

The other exciting development is the use of word processing - long established in some schools, but almost unheard of in many. At one - 12 middle school, children have been writing items for their magazine and sharing the results through the network, then printing them on a centrally located printer.

The siting of micros or "stations" around the school can make the machine seem much more an integral part of the environment and, therefore, more frequently used by the teacher. One member of staff in a primary school summed it up by saying, "To have a comprehensive menu available simultaneously at several stations and at the touch of a button makes the present wheeling and hauling of discs and hardware look both primitive and frustrating."

Needless to say, there are problems but the technological ones have been largely overcome. Two crucial ones remain - finance and in-service training. The latter is relatively simple because there is the expertise in most schools - it just needs developing; the former needs I.e.s.s. and central government commitment.

Mr Baker rightly extolled us at the Hi-Tech Exhibition to embrace the inevitability of an information technology future, but with the computer industry moving so fast, one-off support for schools is not sufficient to maintain the necessary curriculum momentum.

At present all secondary schools are receiving modems; middle and primary schools should be next. When that happens computer networks will be essential. But modems in the primary school is another story.



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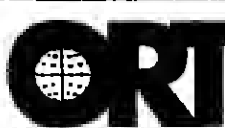
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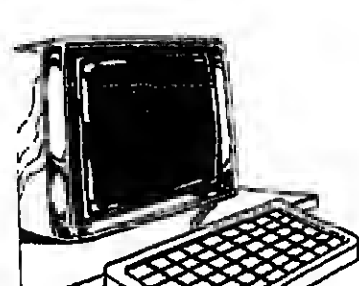
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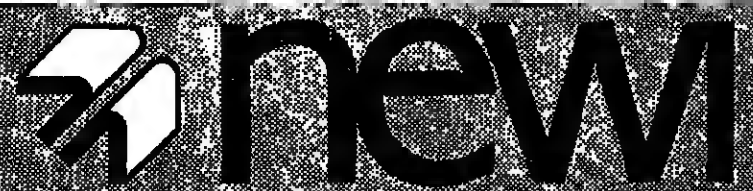
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SQUARE

REPEAT 4 SIDE

FORWARD 100  
RIGHT 90

## Boxed in

MIKE THORNE

Use of a programming language can enable a different set of classroom activities from use of a computer assisted learning (CAL) package. By now, many people are familiar with Seymour Papert's idea of employing LOGO to encourage children to use a programming metaphor in all of their problem-solving work – not just while programming. But, in practice, Logo activities in schools have boiled down to work with DART and Control Logo. PROLOG has become history, the BASIC versus COMAL fight finished before it began, and SMALLTALK – much vaunted in almost every book on CAL – cannot be seen as a panacea.

And there are signs already that the languages which control spreadsheet programs are likely to be extremely popular in several GCSE subject classrooms. So, where are we with programming languages in schools and where is the research going?

BBC Basic was produced as a poor relation to Comal, the language famous for its official (if not practical) adoption by all Danish schools (where, according to a group of teachers I met in Copenhagen, Logo and even Prolog are becoming increasingly popular). Apart from use in computer studies classes and software development (the latter being the reason for Research Machine's recent adoption of BBC Basic), all versions of Basic seem now to have been relegated to control applications. While this work is undeniably successful, using modified Basic to do it is rather like using a 40-tonne truck for a 2km journey between home and school everyday. Isn't there a better vehicle?

With the notable exception of some history teachers and a small band of followers based in Manchester, Prolog has been abandoned by UK educators at a time when its international popularity is on the increase. Richard Ennal's pioneering work showed the database aspects of the language to be teachable and learnable (it is these facilities which the historians like), but it did not address the use of Prolog's more general programming facilities.

Accounts of its possible role in problem solving are unconvincing even at the subject level: Colton's book, *Start Problem Solving With Prolog* (Addison Wesley, 1985), for example, leaves one with the impression that if you could do it in Prolog, you could have solved the problem anyway. However, Prolog may have led us on to expert systems-related activities in schools more quickly than might otherwise have been the case, and it may even have a role to play in that direction, especially if and when the much-rumoured MSC initiative on Artificial Intelligence Applications To Training happens.

While surveying every school, the predominant impression seems to be that Logo in the majority of schools has become equated with Dart's turtle graphics and/or the use of Control Logo in conjunction with interface boxes such as Deltrol's Control-IT. While the use of Dart reflects an insecurity with Logo's list-processing and other "advanced" features, the use of Control Logo has signalled an exciting broadening of the Logo vision.

build-your-own-weird-sci-fi-machines-and-monsters kit, in some ways related to Lego – to construct moving objects and then use Logo to program their actions.

The booklet details children's responses to teachers' challenges, such as "make a machine that will move over snow" and "build a machine that would be useful to a farmer". But the most exciting aspects of the work are not these fairly obviously Science 5-13-related activities. Rather, it is the accompanying imaginative written work which the Robotix shapes stimulate. Scenarios formed from imaginative play with currently popular children's toys like transformers and Darth Vader and his merry persons can now be personified in the Robotix work as essays, poetry and pictures.

Milton Bradley are understandably excited about the apparent success of Drewett's work. At the Earl's Court toy fair recently a seven foot high Robotix model greeted visitors in their stand when they put a foot on the controlling pressure-sensitive mat. And an international dimension has emerged: the French would like a translation of *Robotix Challenges*.

Researchers at the Massachusetts Institute of Technology in Boston (MIT), where Logo was developed, are currently working on a successor called BOXER. In Boxer, commands are grouped by drawing boxes round them. Thus, if the commands  
FORWARD 100  
RIGHT 90  
were boxed in this way, then pointing to that box with a mouse and issuing "do-it" would make the Logo turtle draw a corner. Effectively the boxing of the commands has made them into a procedure. The Boxer equivalent of the Logo procedures:  
TO SQUARE  
REPEAT 4 SIDE  
END

TO SIDE  
FORWARD 100  
RIGHT 90  
END  
would therefore be as illustrated above.

One of the fundamental concepts behind Boxer is to make everything to do with a program's structure visible – or in MIT terminology, concrete and spatially-accessible. Boxes can also define environments so that, for example, doing things in a certain box might affect turtle number one, and in another box turtle two is affected.

Logo programs have to be entered using a program editor and the same is true with Boxer. But another fundamental idea behind Boxer is that a complete repertoire of text editing capabilities will be available to the user during any interaction with the system. Since it is often the case that one wants to use a particular series of editing commands repeatedly, the text editor will be re-programmable and will itself be written in Boxer. Similarly, any part of the Boxer system could be personalized in this way.

Three of us at University College, Cardiff – Andrew Jones, Michael Treadaway and myself – have begun a project to examine the potential of Smalltalk in a variety of educational applications. This work was motivated by the unconvincing written reports and still less inspiring videos that have come from Xerox: the inventors

of Smalltalk. One of these videos showed some children working with an admittedly realistic-looking train as an aid to learning that  
distance = speed × time

Their excited cries took the form of "Oh look, one two zero odometer means 12mph is right" and left one with a feeling of technological overkill who wants computerized Fletcher rules?

It is so difficult to program in Smalltalk that it's hard to see how any teacher could ever contemplate investing the necessary time and energy to learn it. It would take at least 18 months for a person who is already quite a competent programmer and even longer for anyone else. However, there are various packages which sit on top of the raw Smalltalk and attempt to make the language more readily approachable. Much of the widely reported Smalltalk activity in the USA worked through such a package or via an earlier, conceptually simpler version of Smalltalk, and children who have themselves programmed in Smalltalk have almost certainly worked in this way.

For example, with the *Programming by Rehearsal* package, teachers have access to a set of actors (in reality cartoon characters and objects displayed in a menu at the side of the screen), which can be put through pages (by selecting ready-made activities from a menu or by modifying the details of one of them). The emphasis is on programming visually: only those which can be seen can be manipulated. Yet the metaphor is strong enough to support a full-powered programming language.

If a teacher wants to design a piece of educational software (a production), using the *Rehearsal World*, the steps involved are:  
● Auditioning the available performers to find out what they can do.  
● Thus, if the "production" involved getting the pupil to write notes using pictures, the teacher might choose a text performer and a picture performer.  
● Taking a copy of the chosen performer and placing them on the stage.  
● Re-sizing and moving the performer so that they are of the desired size and in the desired place.  
● Rehearsing the production by doing each performer the actions to be taken in response both to pupil cues and cues from other performers.  
● Storing the production away for later retrieval.

*Rehearsal World* isn't widely available in the US or the UK, but a related product, *Actors*, has recently gone on sale in the US for IBM PCs and compatibles. It uses Microsoft's Windows system to provide a programing language in the style of Smalltalk and *Rehearsal World*, but with more of a PASCAL flavour.

While the ideas embedded in these new programming environments are not new, they do provide teachers with a way of moving forward quickly. It may be that small parts of them can be put to good use. The Smalltalk philosophy of modifying existing programs instead of writing new ones are unlikely to move forward quickly – at least in the UK – until more funding is available to encourage both the necessary feedback and the even more costly research.

New Think is a lecturer in computer science at University College, Cardiff.

Judith went to Art School after learning professional design on the Nimbus; now she's using IBM\* 3D design software on an even more powerful Nimbus.

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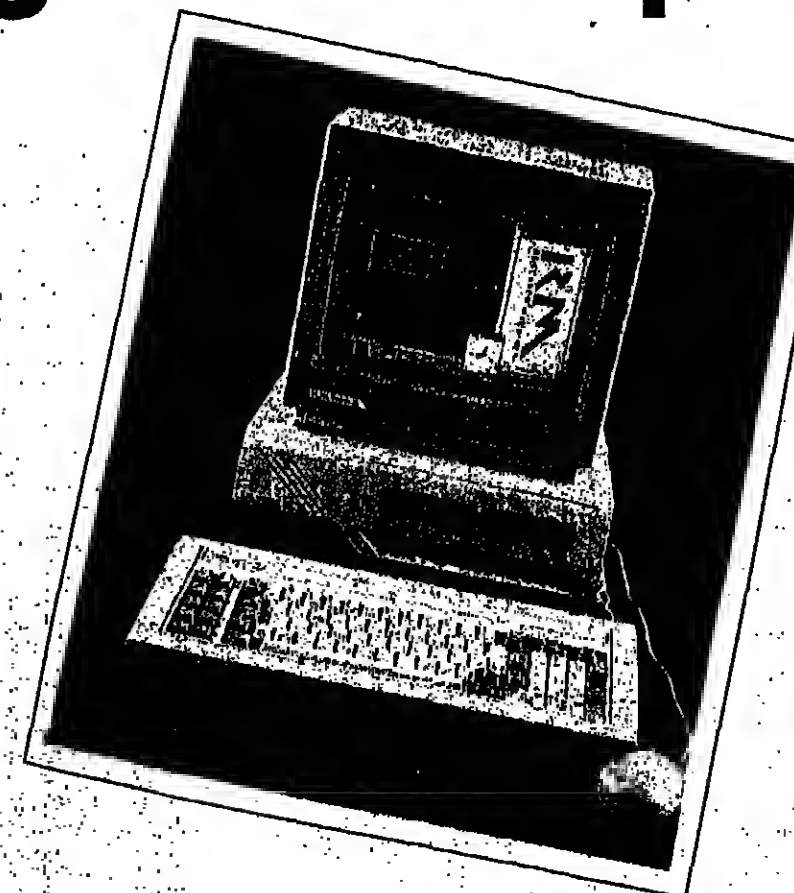
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EXTRA

'Now we have a computer, what shall we do with it?' Work in the science lab

# Horizons

Even in the early days of new technology in the science laboratory, it was possible to see the kind of effects it could have on the curriculum. As soon as one piece of software was mastered, possible extensions were explored and demanded. Electronic data captured using only one sensor led to a demand for devices and software for using a variety of sensors concurrently. Screen display and presentation to which little attention was previously applied, had to be improved considerably. If computers were to have any credibility, they needed to attain the standards of space invaders-type software.

In science as in many other secondary curriculum areas, the attitude of "Now we have a computer, what shall we do with it?" must be discouraged. The computer and its accompanying devices should be regarded as a tool for investigations that were previously too costly, dangerous, lengthy or difficult to perform accurately. Unfortunately the former is too often encountered.

Among the plethora of software and electronic devices that now exist, there are a number of particularly successful applications. For example, a database program like *Quest* has a file of the chemical elements in the periodic table and by using a graphing utility within the program it is possible to plot factors such as atomic mass and melting point against each other. The compilation of a database on birds or trees by younger pupils, however, has much wider implications than the acquisition of biological knowledge.

Software leading to the construction of a binary key is useful in other curriculum areas, but it is in science that precision is emphasized most keenly and that this type of program can have most impact, for example in the classification of a number of substances according to their chemical and physical properties and their subsequent identification.

The wide use of this type of program has generated a demand for a more powerful implementation. A piece of software like *Identify* will plot the shape of the "tree" with the named objects labelled at the ends of the branches. This is one of eight programs in the *Junior Ecocore* package.

Programs that simulate complex systems, such as the manufacturing of ammonia or the running of a *Nuclear Reactor*, enable students to become more familiar with the processes involved and to pose the important "What if?" questions. *Ecology Conservation* models an ecosystem and enables students to appreciate the conflicts that arise due to the different vested interests of fishermen, reed gatherers and birdwatchers.

Teachers skilled to electronics have been using devices to run their computer as a storage oscilloscope or demonstrate fast Fourier analysis transforms. These demonstrations were once impossible for schools because of the prohibitive cost of the apparatus. Today anyone with a VELA, a four-



Children using the Microcomputer Based Laboratory software

channel, data-capture device, can record events occurring in the range of one microsecond to 15 minutes. The instrument is simple to use and can transfer its data for graphical display to an Apple or Acorn computer. By using the wide range of sensors available, it can make an effective contribution to all science areas.

Electronics either as a subject on its own or as part of a technology course is becoming increasingly common and the number of pupils studying it is multiplying. Control boards such as the *Microelectronics for All* kits provide electronic modules for problem solving with whole classes at a time. Manufacturers like Lego and Fischertechnik are already exploiting this growth area.

The transmission of satellite images providing information on weather patterns has been taking place for several years but schools can now capture and display them, with relatively inexpensive receivers and aerials. The initial work concentrated on the NOAA and Meteosat weather satellites, but greater confidence and demand has led to the accessing of the more sophisticated facilities available from Geostat.

In the USA a number of high schools are piloting Microcomputer-Based Labs (MBL) in the science curriculum.

lance heralded a new era for fast, accurate weighing. Many chemists were quick to harness their balance to a computer, thus providing an almost instantaneous graphical display of the changes, such as the action of an acid on marble chips. Today the elimination of yet another onerous technique, titration, is almost with us. By electronically recording and maintaining the head of acid in the burette, the regulation of the rate of flow and careful calibration of the final droplets, the end point can be determined accurately every time.

In environmental studies, the plotting of land or water profiles has been a lengthy and tedious exercise, but software tools can now help. The *Ecological package Ecocore*, enables measurements recorded along profile to be entered on a spreadsheet and displayed graphically alongside. As a result of demand, data originally entered on the record sheet, can now be manipulated and displayed in at least 10 different ways. New technology in this area is even helping to reduce the gender bias that exists.

Both in schools and colleges, the study of the heart and the effects of exercise on the pulse rate to limit an important part of the biology curriculum. Until the recent advent of the physical fitness software, *Body Sense* and the interfacing module, it was too expensive to record the heart beat and show a continuous ECG trace at the

same time as plotting the rate on the screen over a period of up to 20 minutes. Now that this is possible, the potential for further developments becomes apparent. Again, as a result of demand, the program can now record and display breathing rate, skin temperature, the oxygen concentration and flow rate of expired air. By subjecting the human volunteer to exercise, while hooked up to the computer, the range of physiological changes taking place can be shown immediately and recorded graphically.

The identification of suitable areas in the curriculum has been carried out most keenly by the software division of Cambridge University Press, which has produced a range of excellent topic-specific software. *Water Balance*, for example, is a program that reinforces and teaches many of the more difficult concepts associated with osmosis, and *Molecular Motion* provides a model which can be used at many stages in the science curriculum. The software is attractive, easy to use and relevant, which is essential if teachers are to be encouraged to use them.

Science teachers in UK schools can get essential help from trained technicians, and the key to a successful department often lies in their proper use. In one instance, where they have developed their skills to a very high level, the names and quantities of all chemicals are recorded on a database and information is updated at regular intervals; then, by specifying minimum quantities for each chemical, the computer generates a printed order form for the replacement of items below that level.

To ensure effective use of computers by the teachers, a careful analysis of the science curriculum must be carried out and suitable areas identified. No matter how small, these areas should be exploited. The initial momentum, the organization and the evaluation are of paramount importance.

Increasing confidence and familiarity will extend the use of available technology to its limits and stimulate a demand for new material. The limitations of interactive video and expert systems, such as the one by Pauline Black from Reading University, suggesting that while micros have lots of possibilities in primary education, the predominant use is still drill and practice. The truth no doubt lies somewhere between the two.

As far as the use of micros with children with special needs is concerned, the feeling at the moment is that we have only just begun.

No doubt every educational innovator starts with a flurry of excitement, commitment and blinkered enthusiasm. The stress in the early stages must be on what is possible, with a blind eye turned to the failures, (or as we prefer to call them, learning experiences). It could be called the phase of euphoria.

After some while a chill wind of realism blows in and euphoria gives way to caution. This is the phase we seem to be in at the moment. Not that we have doubts about the efficacy of micros with children with special needs - far from it, but we realize how big the task is and how little we have yet achieved.

The diagram below attempts to show the complexity of knowing how best to use micros to support children with special educational needs. Along one axis are some of the types of learning disability. It is a great oversimplification to imagine that all children within one of these groups will benefit from the same computer applications. Nevertheless, the divisions give an idea of the scale of the task.

On another dimension are the phases of education. Software that can help a four-year-old to count and makes good use of graphics is not going to be appropriate for a 17-year-old with early number problems in a further education college. Even with just these two dimensions we have generated 20 separate types of applications. We then add a third dimension of curriculum area, and a fourth of individual differences in learning styles.

Special needs  
for shared experiences

## We've only just begun

MARY HOPE

Those prone to extreme swings in fashion should avoid working in the new technology field. The circumstances are not conducive to an equitable existence.

Optimism can be fuelled by listening to ministerial announcements about how the UK is ahead of the world and there are dozens of micros in each school, thousands of software packages and millions of days spent on teacher training. But a mood of deep despondency can be brought about by going out into the world or reading reports, such as the one by Pauline Black from Reading University, suggesting that while micros have lots of possibilities in primary education, the predominant use is still drill and practice. The truth no doubt lies somewhere between the two.

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The diagram below attempts to show the complexity of knowing how best to use micros to support children with special educational needs. Along one axis are some of the types of learning disability. It is a great oversimplification to imagine that all children within one of these groups will benefit from the same computer applications. Nevertheless, the divisions give an idea of the scale of the task.

On another dimension are the phases of education. Software that can help a four-year-old to count and makes good use of graphics is not going to be appropriate for a 17-year-old with early number problems in a further education college. Even with just these two dimensions we have generated 20 separate types of applications. We then add a third dimension of curriculum area, and a fourth of individual differences in learning styles.

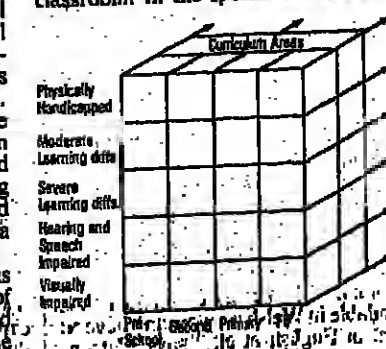
picture gets more complicated. The curriculum subdivisions may be the nine areas in the HMI document *The Curriculum from 3 to 16* or the subjects found on the average timetable in a secondary school, or in the FE sector the CPVE core curriculum might be the most appropriate. Whichever is chosen, the number of "holes" in the matrix increases dramatically.

If we ever got really sophisticated we could add another dimension to take account of the school organization. Some types of use, such as cross-curricular work springing from an adventure game, are more suited to the class teaching organization usually found in primary or special schools. A fifth dimension might be the preferred learning/teaching style of the pupil/teacher.

In an ideal world we would have a body of knowledge about each of these different types of use. We would be able to say to a teacher who had, say, a history class including some low attainers in a secondary school, this is the software that could be useful; these are the applications in this field that have been found helpful and useful; here is a collection of experiences here is how they have used micros. Similarly, with pre-school visually handicapped children or FE hearing-impaired etc. The list is daunting.

If that were not enough to justify the feeling that we've barely begun, we could look at the availability of hardware, software and teacher training. There may be dozens of micros in schools but a lot of them are bolted down in computer science labs. The remedial or learning support staff may have no access, but in practice it does not work out.

For software to be integrated into the curriculum, they must be easily accessible. This means one micro to each classroom. In the special needs area,



what is required is not just access to a micro but the right peripherals, a disc drive, printer and concept keyboard. How depressing to compare across a report by Maureen Cox from York University, saying that only 28 per cent of schools have printers and we still come across schools that have not heard about concept keyboards.

The software situation is not so bad. In some curriculum areas, such as language and reading, there is a selection of powerful word processors and other software. There has been a profitable exchange between the special needs and the mainstream sectors. In other subjects, such as maths and music, there is much room for improvement.

In maths we have been able to use some of the software produced by the Inner London Education Authority's SMILE project and Anita Straker, but not all of it is suitable, either because it is too advanced or because the interest level is inappropriate. There seems to be little use of the micro to support children with learning difficulties in maths that goes beyond drill and practice. There are no doubt several reasons for this, but one must be the limited amount of suitable software.

In music it is only now that programs are becoming available to enable children of limited ability to do more than practise note recognition and pitch discrimination. Two new programs that look promising are *Picture Music* by David Collins and *Compass* by Andy Pierson at ITMA. It is too early to report on how teachers have used them.

There is a strong need for more teacher training in the use of micros with children with special needs. This is not a field in which one short course will suffice. Further time is needed to develop applications relevant to the children in their care. Also new technology will not stand still. For instance, there has only been a small amount of control work with children with special needs, but new equipment and ideas make this an area that ought to be explored further.

The implication for teachers of being at such an early stage is that we will learn from shared experiences. What may seem like a modest use of a program to meet a particular learning need may be just the idea that someone else is looking for. We need to write up and talk about what is happening. The SEMERCS are a focus for this exchange.

For local authorities, it means considering what support they should give to work in this field. It means thinking about microelectronics and special needs when planning in-service training. Many authorities have appointed advisory teachers to co-ordinate the use of micros in special needs. This gives the sort of local support that is needed, and will ensure that the work continues when the funding for the SEMERCS ceases in March 1989.

For the Microelectronics Education Support Unit (MESU), it means that SEMERCS, the ACE Centre (Aids to Communication in Education) and the Special Needs Software Support Centre still have much work to do. There are areas that, because of the size of the task, have barely been looked at. We must work with local authorities to see how the new GRIST (Grant Related In-Service Training) arrangements can support work in this field, and with subject associations to explore the contribution that micros can make to help slow learners.

Most importantly we must prepare for the closure of the SEMERCS in March 1989. It feels as though we are still building the body of knowledge about using micros with children with special needs. While we continue to work with practitioners to add depth to this, we must ensure that there is an infrastructure to continue the work after 1989. The state of the art can be likened to a sailing infant: lots of movement, enthusiasm and curiosity, but still a need for nurture and time to see it through to maturity.

For details of SEMERCS (Special Educational Microelectronics Resource Centre) contact MESU, Advanced Technology Building, Science Park, University of Warwick, Coventry CV4 7AL. For details of MESU (Microelectronics Education Support Unit) contact MESU, Advanced Technology Building, Science Park, University of Warwick, Coventry CV4 7AL. For details of MESU (Microelectronics Education Support Unit) contact MESU, Advanced Technology Building, Science Park, University of Warwick, Coventry CV4 7AL.

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## bits

**MESU**  
For those wanting more information on the organization and aims of the Microelectronics Education Support Unit, there is available a "briefing" leaflet free of charge from LEA. Special Needs/Microelectronics Co-ordinators, Council for Educational Technology, 3 Devonshire Street, London W1N 2BA.

**CEDFAK**  
"Cedfak" is a database system developed by the staff and pupils of The Cedar School in Southampton for physically handicapped children. It runs on the new ADPS package by Comunitel, which allows 600 pages of information and includes headings such as education, medical, parental support, new technology, sport, health.

for disabled, hobbies, employment, satellites, fund raising and fund corner. The database is running on Southampton 730553 from 7.00am-6.00pm.

Other schools are invited to make suggestions on improving various sections to Brian Hart, The Cedar School, Redbridge Lane, Nursling, Southampton SO19XN.

**TELESOFTWARE**  
"Econet Telefax" is now available free from BBC TeleSoftware. The software makes the broadcast telefax services, Cefax and Oracle, available to anyone using an Acorn Econet computer network. Interactive software can be used on the network and can take information from a telefax page and use it as data. To operate the network, an Acorn computer has to be connected to a BBC Micro which acts as the "server". BBC Enterprises, Woodlands, 80 Wood Lane, London W12 6TT.

**Y**ou computer people never want to do anything for education," challenged Cardiff primary teacher Suzanne Smith. Computer expert David Watson tended to agree. As a specialist in computer fraud, his initial image of computers in education was of ill-fated disc copying. However, Suzanne's idea of promoting classroom computer work in Welsh intrigued him and together they successfully applied for funding of £5,000 from the Welsh Office to create a Database Management System in Welsh. It's unusual for grants to be made to individuals, but such was the enthusiasm from the Welsh Office and HMI that the grant went ahead.

"It's not a Welsh database," insists David Watson. That would be no more than an electronic Welsh dictionary. *Ysgolbas*, as it's called, is a straightforward database framework for collecting and manipulating data of any kind. The difference is that it's all done in Welsh. Together, Smith and Watson have created a system in which virtually all the data and programs are in Welsh. The system is available in English at all," says Watson.

## Ysgolbas

NICK BAKER

Soft, have all been given the appropriate Welsh terms. There is already some classroom software in Welsh, but it's all been translated from English rather than being "home grown". Creating *Ysgolbas* involves a careful choice of words that have to be simple enough for primary use and accurate enough for use in upper secondaries. Like its commercial counterparts, application is up to the user and his or her teacher, from names of friends for five-year-olds to sociological study for sixth-formers - all with full capacity to be interrogated and manipulated.

Very occasionally some English appears on screen, but this is only to help users or teachers refer to the BBC manual. All the BBC manual was available in Welsh would have been ideal in English at all," says Watson.











EXTRA

## The 12 DES review documents on computers in the classroom



## Taking stock

1986 was the year for taking stock. One of the Microelectronics Education Programme's last activities was concerned with sponsoring a number of critical reviews of the impact of computing on different areas of the curriculum. The Department of Education and Science invited a number of subject associations to spend a modest sum on bringing together some "enlightened" members of their profession, to weigh the available evidence and to look into a few crystal balls. Recommendations were called for and the findings were to be published and distributed as widely as the funds allowed.

The resulting 12 documents provide an interesting conglomerate on the nature of the penetration of new technology into our classrooms and some pointers concerning aspirations and hopes for future development.

The documents do not conform to any pattern. One can only assume that the briefs from the DES were not always the same. Some will, no doubt, be referred to in years to come as "significant" in terms of professional development, others might soon be forgotten. Few mention the existence of primary schools or examinations, although most mention the GCSE in passing. Some areas of the curriculum were not part of the DES/MEP thinking, notably music, art, careers education and, surprisingly, computer studies or information technology as a subject to study.

The way in which the content was produced varied considerably. Half of the associations carried out national surveys. The Association for Science Education (ASE), for example, polled all of its 17,000 members with a rather hefty form and received just over 200 replies. Bearing in mind that the replies might just be from the more enthusiastic, any extrapolations from the sample on, for example, the penetration of computers into physics labs, from the 1 per cent response must surely be downwards.

Most of them held residential conferences with around 20 invitees representing "all shades of opinion and all sectors of the educational community". Lists of participants, printed in most booklets, show no consultation with industry or commerce in general or even the IT industry in particular. This could be considered an opportunity lost. Very few pick up issues such as gender, multi-cultural opportunities or the less able pupil - issues which must be on the agenda.

The very nature of the exercise precluded a discussion on the opportunities afforded by information technology in cross-curricular activity, but many make considerable mention of the value of the same software tools such as word processing, information handling and graphics packages in general support of the development of

a particular subject area.

So what are the key issues, taking the 12 documents together?

The Microelectronics Education Programme gets little mention beyond the foreword. Some praise its efforts but demand far more from the new Microelectronics Education Support Unit (MESU) which, incidentally, has about one third of MEP's budget.

The relationship with the technology itself is picked up predictably by the home economists, geographers, mathematicians (hand-held graph plotters), CDT and the scientists. The linking thread here is that technology in some way is changing curriculum content, for example, the home economists talk about "electronic shopping, microwave ovens and computer aided pattern design".

A few illustrate points with case studies - one in the modern languages booklet concentrates on the ways in which the Granville package is used throughout a mixed comprehensive 11-18 school with 1,200 pupils in eastern England - a useful section in its own right on classroom management and resource adaptation.

The general survey results could be considered rather depressing. The historians found that only 11 per cent

MIKE ASTON

of the 1,362 responding schools used a computer once a month or more in history lessons and 47 per cent never at all - and remember about extrapolating downwards. Only 3.2 per cent of schools from responding local authorities had home economics departments which had their own computer.

Clearly, access to hardware is a major hurdle to progress right across the curriculum. The home economists spell out four other hurdles in a section entitled "Constraints in using the Computer": namely lack of access, lack of confidence, organization, lack of software, and lack of time.

This list is probably mirrored in all the other subjects and solutions do not necessarily lie in setting up structures and pumping more money and resources into the system.

Of course, critics will ask if all the effort can be justified or if there are significant gains to be made in learning achievement. Will the IT impact be sustained? Some of the reviews attempt to define what benefits we can measure now, but most concentrate more on what is to come.

The chemists seek better graphics,

faster 16-bit micros and increase in compatibility as key hardware issues. The geographers look for remote sensing, automatic data logging and interactive video, while the CDT group want low-cost robots, simple control interfaces and 3D modelling packages.

The list is long and the planners have plenty to consider. The arguments are sometimes weak, though, and lack evidence. If we had X then pupils would learn Y, where Y was not on the curriculum before or Y would be so much more interesting. Only two reviews argue strongly for more research - those from the mathematicians and the scientists. Clearly, there is a need for more fundamental pedagogical research not necessarily related to a particular area of the curriculum.

The recommendations to the DES, the MESU etc are split out in appendices and, in the case of the ASE/Institute of Physics offering, run to 34 paragraphs. The mathematicians are not alone in crying out for a micro in every maths classroom. They all demand a massive increase in in-service training provision but rarely offer guidelines on what might be the most effective strategies.

Some still appear to believe in short, sharp courses and that is a little sad,

since we know that this has little impact on classroom change, even if the participants have an extremely enjoyable time and feel much more "aware" as a result.

The English specialists summarize a more effective approach: "In-service work can only be provided through a development programme that is based on schools and managed by local education authorities. A centralized national agency cannot be sufficiently sensitive towards the needs of individual institutions nor provide the continuity that is required to be effective at this level." Stirring words indeed.

Many address the Information flow issue and some seek that "great database in the sky" which can respond to every request. Not every review asked for more software and there was some suggestion that many areas of the curriculum seek more time to assimilate what is already available rather than add to the already widening gap between availability and reality.

In all, we can see a number of strong ideas and recommendations coming through. The documents for the most part are useful in supporting professional development. The initial training institutions should obtain a set to support their IT activities, as should advisers with general curriculum responsibility. Heads of department, if they have not received the relevant document, should seek to obtain a copy for their staff colleagues to discuss. Subject advisers should already have received their copies.

It is, after all, that not easy to obtain some of the booklets as they are already out of print. This should be one of MESU's priorities.

Lastly, it must be noted that the reviews are addressed to a variety of decision makers. Top of the list is the Microelectronics Education Support Unit but, interestingly, there are messages for heads of department, advisers, the DES, chief education officers, industry and even the educational publishers. I wonder if they are all listening.

The 12 documents: Computers in School Biology, New Physics and New Technology, The Role of Microcomputers in the Science Curriculum, The Role of Microcomputers in the History Curriculum, The Role of Microcomputers in the Modern Languages Curriculum, The Role of Microcomputers in the Mathematics Curriculum, The Role of Microcomputers in the Science Curriculum, The Role of Microcomputers in the History Curriculum, The Role of Microcomputers in the Modern Languages Curriculum, The Role of Microcomputers in the Mathematics Curriculum.

Mike Aston was formerly National Co-ordinator for Computer Based Learning with MEP and is now Deputy Director of the Advisory Unit (Information Technology) at Heston.

## New dimension

JACQUETTA MEGARRY

Random suite of programs for creating random combinations of words or phrases, two examples supplied are a Jargon generator and Consequences, supplied with utilities for splitting files and re-combining them.

Readable calculates a readability index for text in memory, allowing easy revision and re-calculation. Reveal invites user to complete a partially-concealed passage by filling in letters or words using guesswork based on their knowledge of language and content.

Suspect invites user to detect an intruder sentence that doesn't belong in a passage for reasons of style, grammar or content. Thread presents a passage word by word on screen at a range of speeds for timed reading.

Most if not all of these tasks can be performed in BASIC, and probably in any other computer language; several such packages have been marketed. What is distinctive about these Word-Plus programs is that they are shorter, more transparent and much easier to edit than the equivalent Basic ones.

The case for programmable word processing goes far beyond the particular features of this software. What is truly remarkable is that despite the constraints of relatively slow processing, the tiny memory and the outdated technology of the BBC Micro, these programs are versatile and easy both to use and to edit.

Furthermore, programmability means that the marketplace can participate in refining a product after its publication. Given that field-testing of software in its pre-release state is often omitted always rushed and never comprehensive, building flexibility into the product itself has attractions both for customers and producers.

Computer education is still handicapped by the widespread misconception that this is a subject for many people.

who feel nervous about maths and science, and is misleading in a world where data processing and text handling are often more significant uses of computer power than number crunching. All too often, complete literacy has been approached by teaching people to use and attempt to write trivial mathematical programs in languages such as Basic.

Languages such as WordPlus offer a radically different approach. They allow students to use, write and edit programs which work on data that has been keyed on or loaded from disk, rather than ever leaving the word processor. This has special attractions for those who are interested in words and language play and find traditional approaches off-putting. Designers of word processors for the 16 and 32-bit systems of the future make a serious mistake if they fail to make their systems programmable.

The TVEI WordPlus Software Pack is published by the TVEI Unit, 11 Charles II Street, London SW1V 4QR. Jacquetta Megarry is its co-author.

WordPlus is a word processing package for the BBC Micro. It is a collection of programs that can be used to create and edit documents. The programs are: REVEAL, READABLE, SUSPECT, THREAD, and WORDPLUS. They are all written in BASIC and are easy to use. They are also very powerful and can do a lot of things that other word processors cannot do. They are a great addition to any BBC Micro system.

EXTRA REVIEWS

## Simulations from Scetlander

## Northern enterprise



Holiday: Airline Reservation; Cotch; Car Hire; Stock Control Software on disc for BBC B, B+ and Master; other systems as stated. Scetlander Ltd, 74 Victoria Crescent Road, Glasgow G12 9TN.

Scetlander is a joint venture of SCET, the Scottish Council for Educational Technology, and Ron Lander, a leading Scottish businessman who made his money in burglar alarms. He is also Director of Glasgow University's Centre for Entrepreneurial Development and the partnership is a good example of how industry and education can collaborate with mutual benefit.

The software is packaged simply: the A4 format is a reflection of the company's desire to sell licences with i.e.s doing their own disc and paper copying. A standard folder holds the disc securely, though its height makes it inconvenient to shelf and scan. The documentation is comb-bound, serviceable rather than attractive, and the computer printout could be improved by proportional spacing, better layout and more diagrams.

Although pupils notes are normally provided, the language level tends to be high; even the teachers' notes can be obscure in places. They usually open with a summary of the program's title, file name, subject, objectives, level and contents - helpful where available, frustrating when incomplete.

Holiday (£15; BBC/Spectrum) models the flight booking aspect of holiday choice - accommodation is assumed always to be available. If flights are, pupils choose a holiday in one of three resorts in each of six countries, based on an illustrated brochure; if the holiday is available, the program calculates the cost. The departure airports may seem a strange choice to those who live in South Britain (Glasgow and Edinburgh but no Heathrow or Gatwick). However, as part of any primary project on holidays, the program could stimulate a range of language work; it also gives experience of a process of booking not unlike a tour operator's viewdata service, so it might appeal to secondary pupils.

Airline Reservation (£12.50; Apple/BBC/RML) is much more realistic; it allows pupils to look up flight timetables and costs, reserve and cancel seats, and produce passenger lists with specific name searches. It could support interesting work in any computer awareness or computer studies course.

Stock Control (£12.50; Apple/BBC/RML) is aimed at 14-16 year olds in computing and business studies. Its title may mislead, as it only models the re-ordering of components for a production line with a fixed daily output - there are no sales, returns or defective products to allow for. Students can request information on stock levels and delivery lead times and have to try to maximize production without holding excessive stock. Progress charts are available to illustrate the position in graphic form. Although screen design is far below the usual Scetlander standard, this program is good value.

Scetlander's commitment to customer satisfaction has led to some welcome and unusual practices: provision of preview copies, feedback sheets and a programme of telephone and personal follow-up. Although some aspects of certain programs merit criticism, the company's attitude makes a refreshing change from the indifference and inefficiency of many software providers.

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DAVID WHITEHEAD



## EXTRA REVIEWS

The laws of physics v common sense

## Newton's parrots?



the question: can computer programs which simulate events in the physical world help pupils not only to learn, understand and apply the laws of physics but also to believe them?

*Circuits* and *Investigating Circuits* allow the user to create a neat and perfect world of bulbs, resistors, wires without resistance, cells, switches, and (in the latter program) voltmeters and ammeters which aren't shared one between four and don't cost half a week's wages. Both programs are easy to use and attractively presented. *Circuits* allows the user to explore a number of combinations of cells and bulbs, in series and parallel arrangements. All components belong to the perfect electrical world of computer simulations (and some might say of physics itself) where cells do not run down, equal rated bulbs give equal brightness, and pupils do not pester teachers with loose connections. *Cir-*

cuits therefore provides the perfect medium for lower secondary pupils to investigate electricity as it should be - a far cry from the ageing school Worcester circuit board.

*Investigating Circuits* provides the ideal sequel. With this program, although it is less well documented, users can construct an almost endless variety of circuits on a 4 x 4 matrix and begin to "measure" electricity. Voltmeters and ammeters can be brought in at different places in the constructed circuit, values can be given to cells, lamps and resistors, end readings can be taken. In the accompanying booklet it is emphasized that "the program is not designed to replace practical work but is for use in conjunction with real circuits." For example, a circuit can be created on the screen then built up and tested in practice. This will allow comparison between the ideal world of the computer simulation and the real

world of the school science lab. But how many teachers will have the resources to allow both sides of the comparison?

*The World of Newton*, like the two electricity programs, allows the user to investigate a microworld unfettered by the complications of the real world. The program uses a small oblong object which can be moved around the screen with "kicks". The booklet tells you that this object "moves on the screen according to Newton's Laws of Motion". This is true, and very obvious when it travels perpetually like some sort of electronic ice pick - but all everyday objects behave according to Newton's laws of motion. This is the difficult part for the learner and requires the shift in belief first made by the genius of Newton. This program alone may not be enough to shift Aristotelian ideas, but it can help.

The program has four main parts.

Firstly, in "Dynamics" the Newtonian object's mass can be varied. On the screen, "kicks" can be applied in two directions - gravity and friction can be present or not as the user requires. The objects mass can be varied. Graph grid lines can be superimposed on the screen if the object's motion is to be studied closely. In the second part, "Game Design", targets and barriers for the Newtonian object can be created so that one pupil can set up a game for another to play. The third and fourth parts of the program are also games which both involve moving the Newtonian object through a complicated maze ("Crazy Maze") and in the final part in the shortest possible time ("Beat the Clock"). The latter parts of the program therefore involve arcade-like games which (as the booklet points out) will appeal to a wide range of ability.

My suspicion, however, is that only pupils of considerable ability will be capable of using this program to enhance their understanding of Newton's laws. The majority will see the program's later stages as a slightly strange arcade game, particularly as the competitive instinct takes the upper hand. Intervention, imagination and a strong will are certain to be needed by the teacher in extracting educational value from the program once the competition sets in.

Despite these misgivings, I feel that *The World of Newton* is an ambitious and imaginative program which could help pupils to understand Newton's laws if it is used by a determined teacher. The program is well documented for pupils and teachers with a superb account of Newton's law of creativity written by the program's author, Jen Ogden.

All three of the program reviewed above will help pupils to recall, understand and apply some of the laws of physics. Whether computer simulations of this kind encourage pupils to believe these laws is open to question. Perhaps it is fortunate that the assessment criteria for GCSE are stated in terms of knowledge, application and understanding, but not belief.

JERRY WELLINGTON

## Green piece

Ecosoft  
BBC B/B+, Master, Compact and BBC network, £20  
AUCBE (Advisory Unit for Computing in Education), Entonham Road, Hatfield, Hertfordshire

I have suffered science software for over four years and in that time there have been very few software packages that I would recommend to my colleagues. After an hour with *Ecosoft*, the message I would take to those of biology is that if you do field work, you had better invest in this package, as this suite of data handling utilities

would be of great value in ecology. The software would also contribute greatly to lower school science or science courses where emphasis is placed on process skills.

The great merit of *Ecosoft* is that it is so easy to use, yet it is very powerful, although it may not be powerful enough for advanced research. This software has been written by teachers who understand the difficulties involved with biology field work. The authors have used the computer to minimize these difficulties in order to allow pupils to manipulate data and transform statistics into useful graphs

at hand copy that can be incorporated into their reports.

The package is accompanied by a comprehensive manual which is well written and easy to read. It not only explains how to get the best out of the software but also gives good hints and tips as to other aspects of field work that would be enhanced by the use of a computer and appropriate software.

The only criticism I have of this software is that the coding is not very elegant and the input routines could be improved. If a large amount of data is being processed, the program crashes but fortunately the data is not lost.

Any biology teacher who has not previously used a computer would do well to start with this package.

DANNY FEELEY

Changing the course of English history  
Village politics

Norman England  
The Theng  
The Knight  
The Villen's Wife  
The Bordar's Daughter  
40/80 track disc for BBC models B/B+ Master 128; 3.5 disc for Master Compact  
£35.00 (+VAT)  
Fermleat Educational Software, Fernleat House, 31 Old Road West, Gravesend, Kent DA11 0LH.

The turbulent events in an English village between May 1066 and July 1067 provide the historical context for these explorations into the responses of ordinary people subjected to rapid change. Each program looks at what became of people who lived or who came to live in the village. In May 1066 the village was controlled by the Theng. His control comes under increasing challenge and he is replaced by a Norman knight in February 1067.

The two programs on the Theng and the Knight have a similar format. Ideal leadership qualities are deflected through a series of multi-choice scenarios. Do you as Theng simply do what the villagers want? Or do you listen and then do what you think is right? Do you as Knight appoint people you know or do you choose the best people for the job? Do you demand your own way or do you persuade people you are right?

A series of rapid decisions are then made by the Theng and the Knight. Should the Theng resist the Normans? Should the Knight build a castle or a minor house? Each program concludes by measuring the sort of leadership you would like to provide against the sorts of decisions you actually made in practice. The discrepancies are illuminating and invite productive discussion.

Domestic dilemmas confront the Theng and the Knight as they are defined initially and then measured

against actual decisions. In the players are required to analyse the discrepancies themselves. The *Bordar's Daughter* is a strategy game. The Bordar flees the village after a quarrel with his daughter's husband-to-be, a soldier in the Knight's service. The daughter and the Normans in the village make each search for the Bordar making moves in turn on a village diagram of the village. Very much as possible but there is a high element of luck. The object dependence and poverty of the Bordar's families as well as the joining of Saxon and Norman to form one nation are incidental themes in this end it might be more appropriate as a simple board game.

The programs form a series of linked by a series of code words. Decisions taken by the Theng and the Knight are played by the other programs. Possibilities for further work in the changed circumstances of the central characters. How does the Theng respond to his new situation? The Knight has gambled and his life and the success of the village is at stake. The programs will be a rapid return to Normandy will be a probable consequence. Where will the Bordar's daughter make her new life?

Users will need to be familiar with the social hierarchies, basic terminology and some of the terminology associated with a Norman village. A series of three programs are provided. The first three programs are for use with the *Theng* and the *Knight*. The fourth program provides interesting, if a little repetitive, exercises for younger pupils. The four programs are a package and the cost could be justified. Fermleat has thought through the program, trying to achieve the best educational value in a model of its kind.

Domestic dilemmas confront the Theng and the Knight as they are defined initially and then measured



## Adventures in the land of Oozie

Space Mission Mada £16 + £2.40 VAT  
Wizard's Return £16 + £2.40 VAT  
Wizard's Revenge £12.50 + £1.88 VAT  
Understanding Area £11.50 + £1.73 VAT  
BBC B/Master 128  
Shenton Software, 8 Court Street, Sherston, Malmesbury, Wiltshire SN16 0LL

*Space Mission Mada* is a mathematical adventure for children aged 9 to 13, and is the current favourite with the children in my school. The adventure is in four parts, each one taking about 30 minutes to complete in one sitting. The children's mission is to travel from their own planet of Oozie, millions of miles across space to help a small village on earth called Lower Mada. In doing so, they are involved in maths activities, such as estimating distance, pentominoes, codes, simple algebra, patterns and tessellations and problem solving. Each activity is clearly set out and should be tackled by a group of children because of the scope of discussion and collaboration.

The logic of Mada is good and the fact scenes on earth give rise to further work. The graphics throughout are also good and it is not too noisy. The teachers' handbook is quite rudimentary; just what you need to get going. The advice as to further work could have been enlarged, although to any good teacher it will be obvious.

The two adventure programs for eight to 11-year-olds, *Wizard's Return* and *Wizard's Revenge*, are separate packages that can be used in isolation from each other, although they feature the same characters and have many of the same functions. Both involve children in solving a series of problems. *Wizard's Return* is a story of a wizard, King, who rather carelessly keeps getting captured by the evil Wizard. Again, they are based on solving mathematical puzzles and problems and are extremely good.

*Wizard's Revenge* starts with the children on holiday with their aunt at a cottage near the sea. Before embarking on the computer adventure, there is a good booklet of the story so far. It is a good story and tells the children that the Dragon King is locked in a dungeon and must be rescued. To finish their domestic chores in the cottage the children must complete some simple number work, then travel to the land of Oozie, which involves money and number work. They must then explore the area - compass points to master. Eventually some caves are discovered and a friendly dragon tells them of a wicked banished wizard, and his monsters and trolls, who have captured the Dragon King. The children decide to rescue the King and use a magic ship to get to the land.

Arriving on the land, the children find they have to negotiate different regions - forest, desert, swamp etc. In order to obtain four potwards and the dragon king number. This involves the children in shape, symmetry, "line" and "unstable" exercises. Eventually they gain entry to the land - as long as they know their tables - and free the Dragon King. *Wizard's Return* is very similar in that it is an adventure where children have to solve many maths puzzles with the help of a wizard. The program is well thought out and carefully constructed. Area is a difficult concept to get across, but these programs will help. They are not flashy or noisy - just thorough and helpful. DAVID MARSHALL

## EXTRA REVIEWS

Why do deserts get bigger?

## Shifting sands

Sand Harvest  
BBC B, Disc £27.50 + VAT  
Longman Micro Software, 33-35 Tanner Row, York YO1 1JP

Development and third world topics are very much a feature of contemporary curriculum content; nevertheless, teachers are poorly served for choice when it comes to relevant computing resources.

*Sand Harvest* has been developed by the Centre for World Development Education to help meet this deficit, and it does so by providing a simulation dealing with the inhabitants of Mali and the causes and effects of desertification.

Pupils are split into three groups, each taking the role of a nomad, villager or government official in the Sahel. In the process each group pursues activities which may be either mutually exclusive or co-operative with others to the benefit or otherwise of the environment.

In this simulation participants not only interact with the computer-generated situation but also with each other, either within or between groups. Herein lies the strength of the program, as it provides a vehicle for discussion/debate dealing with complex multi-disciplinary issues. This is relevant at a time when teachers are being encouraged to develop a less didactic methodology.

Pupils are made aware of the distinctive preoccupations of their group and

the associated values that surround these. The "nomads" obviously focus upon the physical well-being of their animals but also appreciate the social status attached to animal ownership and the marginality of the monetised economy.

This contrasts with the "government" group who recognize the handling of budgets, provision of schemes, generation of food supplies and foreign exchange. The full simulation is appropriate for upper secondary classes but an options editor allows the teacher flexibility in selecting a number of development scenarios so that particular themes can be focused upon. It is up to the teacher to experiment with the possibilities offered in the light of the age, ability and size of class being taught.

The focus of the documentation is a series of information booklets providing background data for the respective roles. These items stand in their own right for use beyond the computer. There is a useful section dealing with follow-up work activities and a poster is included.

Unfortunately the software is disappointing. Criticism can be levelled on two grounds: first, the design and running of the program and, second, the practicality of using the item with a class. The "Break" key has not been disabled and users can inadvertently terminate the simulation. Throughout the program the arrow keys are used to determine options, but in a confusingly inconsistent manner. The screen dis-

plays are generally good with effective choice of colour and well laid out, clear text. There is a facility to dump to printer.

It would seem that the time required at the keyboard is not the same for each group and this particularly applies to the "government" role. Teachers may emphasize that the amount of time at the terminal is not a paramount criterion in the running of the simulation, but the perceptions of pupils may be otherwise. In any case groups may find themselves merged as when "nomads" lose animals and become "villagers". This affects class organization because discussion groups become unwieldy in size. It is points such as these which need to be addressed at the design stage and the evidence suggests that these have been neglected. Software must be both educationally valid and practical to run.

*Sand Harvest* is a complex simulation with a wide range of options and to do this justice the resource should be seen in terms of use over a number of lessons. A multi-media approach with video and text is relevant. The program should not be dismissed as a resource because it is in the hands of a teacher familiar with Computer Assisted Learning, and used with pupils who have already had a taste of discussion work with computer simulations, the collective experience may lead to some very worthwhile lessons.

JOHN CHUBB

## Byte

Teeth  
BBC £15 + VAT  
AVP Computing, Hocker Hill House, Chestpote, Gwent

This software has been produced to teach children about teeth. Holding >shift< and pressing >break< auto-matically starts the program. Within seconds your computer makes the most grotesque noise. Don't worry, your computer is not about to self

destruct, it is just this programmer's attempt to entertain you with some computer "music".

After you silence the "beast", you are presented with a menu which offers insight into three aspects of teeth plus a test. The first option presents users with 52 facts in five very full screens of text and graphics and there are two further options. My disc drive could not read the rest of the disc, so I was spared having to dull my mind further with this banal program.

It is sad that teachers not familiar with the power of computers may have their first introduction through this type of software.

DANNY FEELEY

## bits

## NEWSPEAK

Orovox is an artificial voice aid which can be used as a stand alone device or as a speech synthesiser linked to a computer. It is aimed at people with a vision and/or speech disorder. Speech Systems Ltd., Unit 8, Enterprise Row, Rangemoor Road, London N15.

## ADDISON-WESLEY

EDLIB  
An Electronic  
Library System  
Project Director:  
M Bostock

EDLIB, a bar code reader library management system, has been designed for use in the average-sized school, college or departmental library. It will cater for the issue and return of up to 65,000 items to 2,500 users. The facilities to the package include many of the features found in most main public libraries, and some specifically applicable for school use. EDLIB also provides a model that can be used in the teaching of information handling and communication skills.

EDLIB may be dual managed, either by use of the bar code reader or the keyboard. The full EDLIB package contains: a bar code reader; a program disk; a Titles File; a user manual; sample bar code tickets for books and users; function key strip for the keyboard.

There are two distinct parts to the library system: an Issues System.

used in conjunction with a Titles File, and a Catalogue System. In addition, a System Manager section provides utilities for creating and managing the files, issuing bar codes and searching the database. The Catalogue System (technically known as a FIF system) allows an interface between EDLIB and other database systems such as QUEST and INFORM.

EDLIB enables users to be issued with their own unique library ticket. This ticket records the user's name, the library account number and the books out on loan. A maximum of three items per user has been allowed, but this can be increased to 12 by allocating extra accounts to any one ticket.

Systems Requirements: BBC Model B or Master Series 128; Dual 80-track, double-sided disk drive; Printer: Epson, Wofter, Dinky Wheel and most other standard printers.

1987/201 17541 X/BBC Micro Disk Pack (80T) £114.95 + VAT

Phone us for a free copy of our catalogue.  
Addison-Wesley Publishers Ltd., Finchampstead Road, Wokingham, Berkshire RG11 2NZ. Tel: (0734) 794000.

GCSE COMPUTER  
STUDIES  
An Applications  
Approach  
P McGee & G Williams

Satisfying the main objectives of 16+ National Criteria for Computer Studies, this book deals with the major topics of a computer studies course and covers computer systems analysis, design and applications. It also integrates questions, discussions and activities. Specimen GCSE examination questions are provided. 1987/200pp/0 201 19071 0/paper/ £5.95

A LOOK AT  
COMPUTERS  
An Introduction to  
Computer Studies  
J Winch & J McCarney

This introduction to computers and IT for pupils of 10-14 years, covers the new Scottish syllabus for S1 and S2 in Computer Science. Intended to motivate, much pleasurable information is given and pupil activities are integrated. It introduces computing concepts through real-world situations. 1986/56pp/0 201 19072 9/paper/£4.50

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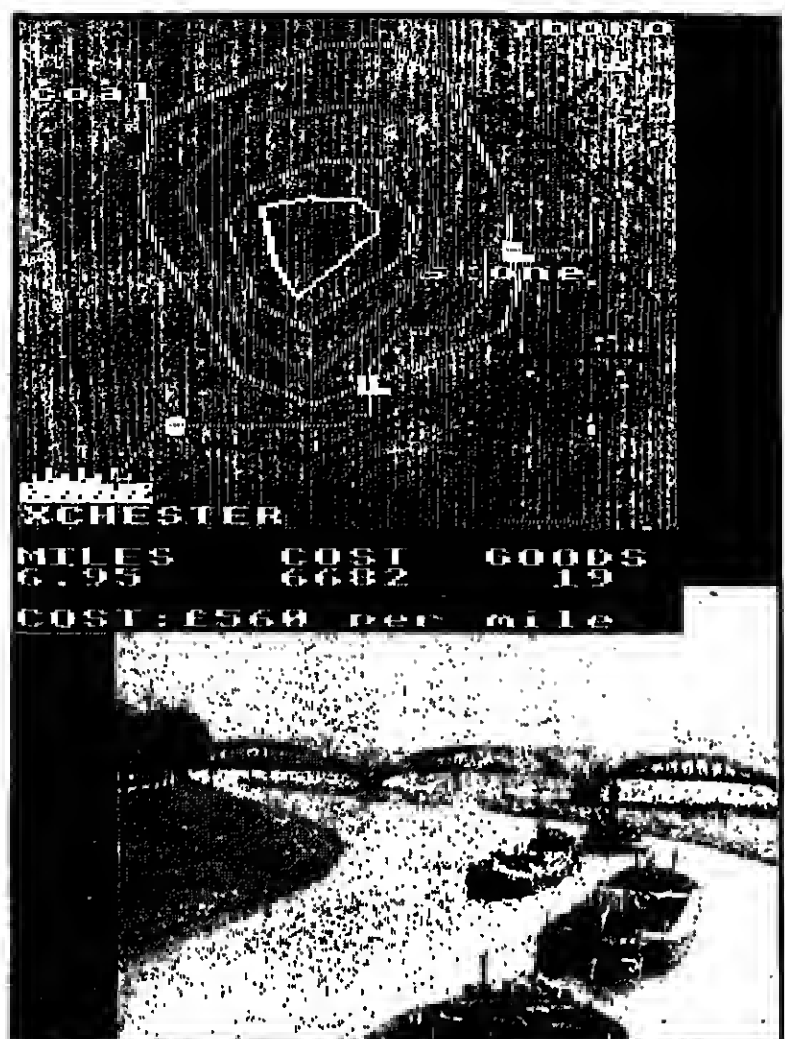
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## EXTRA REVIEWS

Software for geography: the best from 1986

## On solid ground



geographical learning, depend on the extent to which the best decisions rely on knowledge and understanding rather than simple button-pushing.

To this respect, *Canal Builder* is perhaps the simplest product, involving only a few factors (farming or mining, cargo, rivers and hills as route barriers), and is targeted at children from the age of 10 years.

*Siting a Blast Furnace* is somewhat more sophisticated, as it evaluates sites by calculating overall costs which incorporate a range of raw materials, transport costs and environmental implications. The simple numerical basis of the model is helpfully explained in the teachers' booklet, and the facility to change the cost weightings permits a considerable degree of control of the outcome - and, as a result, the program is aimed at 13 to 16-year-old students.

The *Prospecting Game* is intended principally for sixth form students, and requires both time and detailed plotting if its full potential is to be achieved. Up to five groups of students (mining companies) compete to explore an area for minerals, construct the road and mining infrastructure, and extract the minerals.

At each stage, multiple options are available (several survey scales, surface and underground deposits, free selection of road route, choice of mining technique), and to add to the

learning task.

Another traditional context for repetitive learning has been revision, and in this sense it is no surprise to find *Geography (O/GCSE)* on the list of Letts Key Facts Revision Software. The approach is basic and within its very limited terms of reference, effective. Revision is divided into sections: four physical topics (landforms and climate) on one side of the disc and six human sections (agriculture, industry, population and settlement) on the other. Simple graphics are used to trigger the questions and, in some cases, to build up the answers.

Wrong answers prompt a repeat of the question, though the computer's view of "wrong" is at times unhelpful since it is unable to recognize acceptable alternative terms. The teacher or with the rather limited coverage of material and questions, suggest that revision books still have many advantages over programs.

An altogether less traditional but more challenging database application is the *World Patterns Disc*. This is essentially a collection of more than 40 sets of social and economic statistics for the countries of the world, together with routines for listing, plotting or manipulating them. Mapped geographical symbols on screen or on a printer (for any selected area) yield immediate access to distribution patterns, but the real power of the package lies in its manipulation routines - simple in themselves, but adding greatly to the sense of understanding in the statistics.

Any arithmetic combination of two files can be achieved (eg imports minus exports, or production per head and files can be ranked and selected, and pairs of files can be compared. The presentation of this package is extremely basic and it is far from user-friendly, but it represents a treasure house of information and, for once, a genuine invitation to creative computer use.

In some senses, the best has been saved until last. *Granada Television's Slopes* combines many of the best attributes of the programs reviewed above, and employs them creatively and efficiently. It provides data-handling routines for slope measurement, comparative data files for the Lake District and Bodmin Moor. Simple slope angle profiles plotted, curves are created, and samples compared using the Mann-Whitney test. This in itself provides numerous opportunities for exploring slope morphology and process relationships, but the scope is still further increased by the provision of a modelling routine which allows a graphic simulation of slope change through time in any user-defined profile. The potential for enhanced understanding of slope development and of modelling in physical geography is very great. Perhaps, after all, the introduction was too cautious: perhaps the new generation of software approaches to geography is already making its mark.

MICHAEL CLARK

## Angling for skills

The Fishing Game 40/80-track disc for BBC B and Master 128, £17.50 + VAT. Netherhall Software, Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU.

This is a well-designed, easy to run resource which simulates various dimensions of the fishing industry in this country. The program allows students to command four trawlers which work the fishing grounds of the Continental Shelf, providing a wide range of opportunities for dealing with commercial and locational issues. In the process, mathematical, mapwork and accountancy skills are developed. Too often, documents which do not run across

poor relation in a software package, but in this case, the authors have developed a text with clear running instructions and well-produced information and record sheets. Both teachers and those involved in teacher training will benefit from looking at the pages covering teaching strategies. There are plenty of practical suggestions helping the teacher to make the process of CAL worthwhile.

In order to overcome the constraints of the timetable, options are available for running either a short or long version of the simulation. The former could be covered in a double lesson, assuming preparatory work has been done. In any event, unfinished games can be saved.

It is rather surprising to see no link made between the game and the

fact that, interestingly, there is a facility to make partial copies of the supplied disc, so that several standard machines can run the game after the master disc has been accessed.

The Fishing Game can be used with a wide range of ages and ability, and it is for teachers from primary to GCSE levels to explore the potential of the options available. The software is distinguished by the opportunities it presents for discussion work as well as the application it has in several curriculum contexts, especially geography, maths, humanities, environmental and commercial subjects. On these grounds alone, this MEP (Microscale Educational Programme) supported program is well worth purchasing as a school resource.

JOHN CHUBB

## Computers

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## DEPUTY HEADSHIPS

Second Masters/  
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Required from 1st September  
1987. Fully qualified and  
experienced teachers for ap-  
pointment to the post of  
Deputy Head/Mistress for  
Group 10.

Applicants should have an appreciation of the needs of the whole school, curriculum and pastoral and administrative issues. For full details of the school and for an application form, please write to the Headmaster, King'sbury School, Bournemouth, Dorset, BH1 1AA. Closing date 27th March 1987.

130010

## DEPUTY HEADSHIP

Second Masters/  
Mistresses

## DORSET

KINGSBURY SECONDARY  
SCHOOL  
Hedge Road, Bournemouth  
B10 1AA  
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OXFORDSHIRE  
OUR LADY'S CONVENT  
SENIOR SCHOOL

up to 1000  
 A level  
 Maths  
 London  
 Apply to  
 Principal,  
 133  
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 references,  
 184854

Radley Road, Abingdon,  
 Oxon, OX14 3SP  
 Independent of 1966 plus 11-18  
 Required September 1987.  
 Full-time or part-time teach-  
 ing experience in both Physics  
 with Mathematics. Ability to  
 teach 'A' level Physics neces-  
 sary. Rurthrum school.  
 Apply in writing to the  
 Headmaster with three refer-  
 ences and a list of two re-  
 ferences. (02963) 184828

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PERTHSHIRE  
 GLENMORN COLLEGE

**CHEMISTRY**

Required for September 1987, an able GRADUATE student to teach CHEMISTRY at the C.E.C. level. The position offers a "Good Job" and "A Level Opportunity for good where you can teach with responsibility." This bridge work and 9 level salary are available through our subsidiary BIOLOGY department, with surroundings ideal for midwork and research contribute strongly to extra-curricular activities and achievement.

Free single or married accommodation provided. Olannamond salary scale. Full time hours 36 per week.

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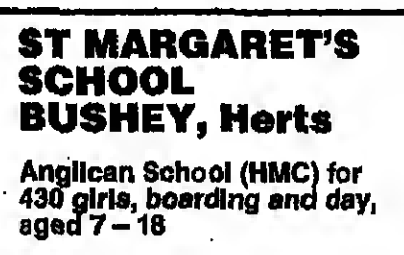
Please apply with C.V.  
and names, addresses and  
telephone numbers of two  
or more referees to the  
Warden, Cleumond Col-  
lege, Perthshire PH1 3JY.  
Information further details  
can be obtained. 18492

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**PERTHSHIRE  
STRATHALLAN SCHOOL.**  
15-16 year boys: 100 girls:

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Required for Sept  
certified person  
teach PHYSICS AND/OR CHEMISTRY  
MISTRY In expanding de  
ments, Large Sixth Form w  
and two local schools  
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Applicants should wr  
with the Remos of two  
faraag end telephone no.  
liaisator: Mr. Sathish  
[4988x] Farth Pils BE  
[4988x] 1841



Further details and an applications form may be obtained from:- The Secretary, Clergy Orphan Corporation, 57b Tufton Street, London SW1P 3WL. Latest date for receipt of completed application forms 22 March 1987.

Tel: 0882 48431  
Independent Girls' RC School  
for 430 girls, mostly boarders  
Sixth Form of 120  
Required for September 1987  
teacher of PHYSICAL EDUCATION.  
Salary Burnham Scale 1 plus  
London Fringe Allowance.  
Letters of application  
should be accompanied by a cv

When management the student  
 highly approach the desirable  
 work. All girls take Ralipipue Stu-  
 ideas to OCE level and e cum-  
 ment of girls go on the study the  
 subject at 'A' level.  
 Salary based on Eurnhem  
 Google A. Resident or npr-  
 resident.  
 Application with p full C. V.  
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tion, giving the names  
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now, Essex CM6 3LL.  
Applications should be  
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**Apply by letter  
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Director, C  
CV1 4AU**

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Re-advertisement Previous

...cants need not re-apply.

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For further details

12731  
Bevenpaka  
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(48871)

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 184824

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**THE UNIVERSITY OF CHICAGO**

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**MIDDLESEX**  
ST MARTIN'S SCHOOL  
Northwood, Middlesex HA5  
20J  
1406 1300 boys including 41

Education specialist to help

Apply in writing with details of 8 references to persons or stores or military subjects. (44788) 2946

**SURREY**  
CHINTHURST SCHOOL  
Tadworth, Surrey KT25 5QJ  
Tel: Tadworth 2011  
I.A.F.S. Only School for 25  
boys 8-16 years  
for 1987-88. O.Gumes and  
for September 1987 to 1988  
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**Religious Education**

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**Other Assistants**

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**GURREY**  
**ABERROUR SCHOOL**  
I.A.P.S. 219 day boys 5-11  
years  
Required for September

It will also involve subjects by arrangement. Abernethy has a tradition of co-operation with the Church of England and expects that the same approach will be obtained to maintain that tradition. Solery will be by negotiation but will take into account the possibility of income from the post.

The Section subscribes to the D.E.S. Pension Scheme and expects to continue to do so. Plence expects to continue to work with full and part time staff and to refer to the Committee, Abernethy 66, Brighton Road, Surph, Dorset, Bournemouth 66.

**Science**

**Heads of Department**

**BERKSHIRE  
CREAM SCHOOL  
Berkshire**

Re-advertisement  
Required for September  
or January 1958. For  
Science, able to teach  
C.S.E. and  
A-level standard.  
is an all-round school  
the successful applicant  
have to be a member of  
boarding school and be  
pared to be involv  
extra-curriculo activities  
Apply in written  
curriculum vitae and  
names of two referees  
Headmaster, Newbury  
S.D.O. (55781)

**MICHAEL'S**  
Stock Court,  
Barnstaple,  
North Devon.  
0323 313131  
0323 313131

o-ed School with 165 pupils  
or September, 1987:  
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The Headmaster, enclos  
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**WALTHAM FOREST COLLEGE**  
for Further and Higher Education  
School of Catering, Hotel Administration and Tourism

## Head of Department Grade IV

The post is tenable from 1st September 1987 following the retirement, on medical grounds, of the present Head of Department.

The School has an excellent national and international reputation and consistently wins medals and awards for student success. We shall be seeking a new Head of School with the ability and personality to foster this reputation and promote the School as a centre of excellence.

Applicants would be expected to have considerable experience in the hospitality or travel and tourism industry as well as experience in a senior post in further or higher education and appropriate professional and educational qualifications.

Salary £17,430 - £19,440 inc p.a. according to experience.

Application form and further details from the College Personnel Services Officer, Waltham Forest College, Forest Road, London E17 4JB. Tel: 01-527 2311 Extn 259. Closing date: 2nd April 1987.

AS AN EQUAL OPPORTUNITY EMPLOYER IN A MULTI-RACIAL AREA WE EXPECT ALL EMPLOYEES TO HAVE AN UNDERSTANDING OF AND COMMITMENT TO FURTHERING EQUALITY AND ELIMINATING DISCRIMINATION.

AN EQUAL OPPORTUNITY EMPLOYER  
Applicants are considered for their suitability for the post regardless of disability, sex, race and marital status.



**COLLEGE OF FURTHER EDUCATION**  
continued

**AVON COUNTY WESTON-SUPER-MARE COLLEGE OF FURTHER EDUCATION**  
Kingsmead Road, Weston, Somerset, Avon BS22 8AL. Tel: 01264 21601.  
Required from 1st September 1987. Lecturer Grade I in English and related subjects. The School of Humanities to teach OCE English Language and Communications on vocational courses.  
For an application form and further particulars please contact the Principal at the above address. Closing date: 25th March 1987.

Avon is an equal opportunity employer. 250026

**HAMPSHIRE GOSPORT TECHNICAL COLLEGE**  
COMPUTING DEPARTMENT  
LECTURER I required for the full-time post from September 1987 to teach primary data processing and the commercial aspects of computing on a wide range of courses within the controlled area.  
Salary: £8,843 - £11,855.  
We pursue a policy of equality of opportunity. Applicants should be well qualified in the above subjects. Further information may be obtained from the Registrar, Gosport Technical College, Gosport, Hampshire, PO11 2RN. Tel: 01462 45111. 250026

**SALARY SCALES** are in accordance with Burnham (F.E.) award effective from 1st April 1986 and include an Inner London allowance.  
Lecturer I on an incremental scale £7,853 - £12,975 with a starting point depending on qualifications, training and experience. (Wages £13,173 - £14,226).  
JOB SHARING. Applications for job sharing will only be considered if submitted on paired basis. Registrars of potential job sharers are maintained for Colleges by Karen Newbury, PAF/MSD OPS, Room 436, The County Hall, London SE1 7PS.  
SOUTH WEST LONDON COLLEGE  
Department of Secondary and General Education

## Lecturer I in Mathematics & Numeracy

To teach on a variety of courses within the Department up to and including 'A' level mathematics and statistics.  
Applicants must be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**SOUTH LONDON COLLEGE**  
Knights Hill, SE22 0TX. Tel: 01-870 4486.  
Department of Humanities and General Studies

## Associate Lecturer in Sociology (0.8)

Applications are invited from graduates who are teachers/trainees for this post tenable from 1 September 1987, in the area of Social Sciences, specialising in Sociology. Teaching will be in the area of GCE 'A' level and GCSE. Applicants would be expected to contribute to other aspects of the department's work, particularly Adult Returner work, including Access, and General Studies.  
SALARY: as indicated above.  
Further details and application forms may be obtained from the College Registrar. Please enclose SAE.

**CASSIO COLLEGE**  
LANGLEY ROAD, WATFORD, HERTS WD1 3RH  
Required for 1 September 1987:

**DEPARTMENT OF ADULT STUDIES**  
Tutor Organiser

**Lecturer Grade II**

to develop Non-Vocational Adult Education in SW Herts. Duties include administration of courses over a specified geographical area and some teaching within the Department. The post offers scope for initiative and new ideas.  
Salary: Burnham FE scale, Lecturer II - £8,595 - £13,858 plus £309 London Fringe allowance

**DEPARTMENT OF FOOD INDUSTRIES**  
Lecturer Grade I

In Hotel Systems and Catering Accountancy

to teach City & Guilds, BTEC Diploma and NEBSS courses in Catering, Bakery, Accommodation Services and Hotel Reception Studies students.  
Applicants should have suitable qualifications, a catering background, appropriate industrial experience and basic computer literacy. Experience in teaching is desirable but not essential.

**Lecturer Grade I**  
In Food and Beverage Service

to teach BTEC and City & Guilds courses up to 707/2 and 717 standard.

Applicants should hold the above-mentioned qualifications and have a minimum of 5 years good trade experience. Teaching experience is desirable but not essential. An ability to teach on other catering related subject would be an advantage.

The above two vacancies are due to staff promotion.

**LIBRARY AND RESOURCES DEPARTMENT**  
Further Education Adviser

**Lecturer Grade I**

as a member of the College Advisory Service, to develop schools and community links and to provide individual advice to students, staff and public on courses and careers.

Lecturer Grade I salary: £9,843 - £11,855 plus £309 London Fringe allowance.

For further details and application form please write to the Principal at the above address (SAE please).

## Blackpool and Fylde College

'A Centre of Excellence' for Education and Training

Faculty of Arts

**DEPARTMENT OF HUMANITIES AND LANGUAGES**  
ASSOCIATE LECTURER IN SOCIOLOGY

Ref: AC/1/3A

**DEPARTMENT OF VISUAL COMMUNICATION**  
LECTURER 1 IN COMPUTER GRAPHICS

Ref: AB/1/4

**DEPARTMENT OF SOCIAL & HEALTH STUDIES**  
ASSOCIATE LECTURER IN SOCIAL SERVICE AND COMMUNITY CARE

Ref: AA/1/1A

**FACULTY OF BUSINESS, FOOD AND MANAGEMENT**  
TEMPORARY ASSOCIATE LECTURER IN OFFICE STUDIES

Ref: BFMe/1/1T

Faculty of Technology

**DEPARTMENT OF CONSTRUCTION**  
LECTURER 1 IN PLUMBING AND HEATING AND VENTILATING

Ref: Te/1/

Closing date: 25th March, 1987

For further details and application form apply to The Principal, Blackpool and the Fylde College, Astle Road, Blepham, Blackpool FY2 0HB.

Lancashire County Council  
An equal opportunities employer

**COLLEGE OF FURTHER EDUCATION**  
continued

**GRAMPAN REGIONAL COLLEGE**  
NORTH COLLEGE OF FURTHER EDUCATION  
ST ALBANS COLLEGE  
DEPARTMENT OF GENERAL STUDIES

**LECTURER I IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER II IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER III IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER IV IN COMM.**

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**LECTURER V IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER VI IN COMM.**

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**LECTURER VII IN COMM.**

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**LECTURER VIII IN COMM.**

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**LECTURER IX IN COMM.**

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**LECTURER X IN COMM.**

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**LECTURER XI IN COMM.**

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**LECTURER XII IN COMM.**

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**LECTURER XIII IN COMM.**

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**LECTURER XIX IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XX IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XXI IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XXII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XXIII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XXIV IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**HERTSHIRE COUNTY COUNCIL**  
EQUAL OPPORTUNITY EMPLOYER

**ST ALBANS COLLEGE**  
DEPARTMENT OF GENERAL STUDIES

**LECTURER I IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER II IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER III IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER IV IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER V IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER VI IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER VII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER VIII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER IX IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER X IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XI IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XIII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XIV IN COMM.**

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**LECTURER XV IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XVI IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XVII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER XVIII IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

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**LECTURER XX IN COMM.**

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**LECTURER XXI IN COMM.**

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**LECTURER XXIII IN COMM.**

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**LECTURER XXIV IN COMM.**

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**LECTURER XXV IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**NORTH TYNSIDE METROPOLITAN BOROUGH OF FORTH TYNSIDE**  
NORTH TYNSIDE COLLEGE OF FURTHER EDUCATION

**LECTURER I IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER II IN COMM.**

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**LECTURER III IN COMM.**

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**LECTURER IV IN COMM.**

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**LECTURER V IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER VI IN COMM.**

Applicants should be graduates or hold Degree equivalent professional qualifications. Awareness of relevant developments in technology and an interest in their application to the teaching of mathematics is essential. Further details and forms of application returnable within 14 days from Deputy Administrative Officer, South West London College, Tooting Broadway, SW17 0TG.

**LECTURER VII IN COMM.**



















# THE ASSOCIATED EXAMINING BOARD

## ASSISTANT DEVELOPMENT OFFICER

Applications are invited for the post of ASSISTANT DEVELOPMENT OFFICER at the Board's offices at St. Hill, Guildford.

The Assistant Development Officer is responsible to the Development Officer for the Board's Testing and Training Services programme. The Development Officer is concerned with the development of the examination system and the provision of services to the public. The Development Officer is also responsible for the development of the examination system and the provision of services to the public.

Applicants who will probably be in the age range 25 to 40, should be formally qualified at first degree level with experience in one or more of the following fields: teaching, business or public administration, examination work, careers advisory service.

The appointment will be on the Administrative Officer's scale from £8,420 per annum rising by four annual increments to £13,420 per annum (under review). The starting point on the scale will be determined by the qualifications and experience of the successful applicant.

Further details of the post, together with an application form, may be obtained from the Personnel Officer, The Associated Examining Board, St. Hill House, Guildford, Surrey GU1 2EX. (Tel: 0505 505505) to whom completed forms should be returned not later than Tuesday 24 March 1987. (14927)

# EXECUTIVE OFFICER

required in short courses and Study Visits Section dealing with overseas education. Essential requirements are: a knowledge of the UK and overseas education systems, a working knowledge of European languages, proven managerial and administrative ability and communication skills. This temporary appointment is to cover maternity leave commencing at Easter. Salary range for the post is £8,345 to £10,356 (under review). Please telephone 0-488 5401 for further details or write to: Establishment Officer, Central Bureau, Clonsilla, 26th March 1987. 500000

## Educational Psychologists

WAKEFIELD  
Please see display advertisement on page 53.

All advertisements are subject to the conditions of acceptance of Times Newspapers Ltd, copies of which are available on request

**EDUCATIONAL PSYCHOLOGIST (Part-time) (permanent)**  
Ref. No. EDU/1258/CO  
Bath and Keynsham area.  
Required for 7 sessions per week, all year round.  
**EDUCATIONAL PSYCHOLOGIST (Temporary) (Full-time)**  
Ref. No. EDU/8954/CO  
Bristol Central.  
To cover for maternity leave which is anticipated will commence in April.  
FOR BOTH POSTS -  
Salary: Scale SOTS P4-H7 P4 £10,170 - £17,148 pro-rata (dependent on age and qualifications).  
To work under the direction of a Senior Educational Psychologist to contribute to the Provision of Educational Psychology. The service is large and offers opportunities for specialisation and professional development.  
There are good induction and support procedures and the service works in close collaboration with Child Guidance and with the Health and Social Services Department.  
Applicants should hold an Honours Degree in Psychology or a recognised equivalent qualification, at least two years' qualified classroom teaching experience and have successfully followed a course of specific post-graduate professional training as an Educational Psychologist.  
Assistance with removal expenses is given where appropriate (applicable to permanent posts only).  
Application by form only, available with further details from the Director of Personnel Services, PO Box 270, Avon House, The Government, Bristol, BS8 9TE, or telephone Bristol 268886 (insert at the number after office hours).  
Please quote appropriate Ref. No. when asking for forms which must be returned by 3rd April 1987.  
Avon as an Equal Opportunities employer considers applicants on their suitability for the post, regardless of sex, race, disability or sexual orientation. (14927)

**Education Department**  
**Avon**  
COUNTY COUNCIL

**UNIVERSITY OF LONDON SCHOOL EXAMINATIONS BOARD**  
**GENERAL CERTIFICATE OF EDUCATION EXAMINATION**  
The Board invites applications for the following appointments:  
**CHIEF EXAMINERS**  
ADVANCED LEVEL for JUNE 1990  
GEOGRAPHY for JUNE 1989  
BIOLOGY for JUNE 1989  
ANCIENT HISTORY  
BIOLOGY  
CHEMISTRY (PRACTICAL)  
ENGINEERING SCIENCE  
LAW  
PHYSICS (Comprehension and questions on the Topics)  
SOCIOLOGY  
ADVANCED SUPPLEMENTARY LEVEL  
PHYSICS for JUNE 1989  
ORDINARY LEVEL (OVERSEAS) for JUNE 1989  
ENGINEERING SCIENCE  
PHYSICS WITH CHEMISTRY  
MODERATORS FROM 1 AUGUST 1988  
BRITISH ECONOMIC AND SOCIAL HISTORY  
CLASSICS  
COMPUTING SCIENCE  
ENGLISH  
GEOGRAPHY (ADVANCED LEVEL)  
GEOLOGY  
GOVERNMENT GROUP OF SUBJECTS  
ITALIAN  
MUSIC  
PHYSICS  
SPANISH  
Applicants should be graduates or hold appropriate qualifications and should be under 65 with five years' recent teaching experience. Examining experience is essential. Chief Examiners' duties include setting question papers, advising on the award of grades and may include the supervision of a team of examiners. For application forms and further details write to: The Secretary, University of London School Examinations Board, Stewart House (Room 215), 32 Russell Square, London WC1B 5DN. Applicants should enclose a self-addressed foolscap envelope. Completed application forms should be returned by 22 April 1987. Previous applications for the Advanced Supplementary level post in Physics will be considered with any new ones. (14938)

**University of Oxford**  
**Delegacy of Local Examinations**  
**Secretary to the Delegates**  
Applications are invited for the post of Secretary which becomes vacant on 1 October 1987 on the retirement of the present holder.  
The Secretary is the chief officer of the examining board and is responsible to the Delegates for the conduct of its GCE examinations and related activities, including GCSE. Applicants should have experience in the educational system at secondary or higher levels; administrative experience would be an advantage.  
The salary is on the University's academic-related scale IV, currently in the range £10010 to £25840.  
Full details, with an application form (to be returned by Tuesday 24 March), may be obtained from The Chairman, University of Oxford Delegacy of Local Examinations, Ewert Place, Summertown, Oxford, OX2 7BZ, telephone Oxford (0855) 618623. (13207)

# A S Level Examinations June 1989

The Associated Examining Board invites applications for the following appointments at GCE Advanced Supplementary level. Applicants should have a degree or equivalent qualification in a relevant subject, a minimum of four years' recent relevant teaching experience and experience of examining.

**Chief Examiners**  
ACCOUNTING ref A9  
CHEMISTRY ref A11  
COMPUTING ref A5  
CONTEMPORARY FRENCH ref A3  
ECONOMICS ref A9  
GENERAL STUDIES ref A5  
GEOGRAPHY ref A11  
LAW ref A9  
MATHEMATICS (3 posts) (i) Pure with Applications ref A5 (ii) Calculus and Particle Dynamics ref A5 (iii) Applied Statistics ref A5  
PHYSICS ref A9  
SOCIOLOGY ref A9

**Moderators**  
CHEMISTRY ref A11  
COMPUTING ref A5  
GENERAL STUDIES ref A5  
GEOGRAPHY ref A11  
MATHEMATICS (3 posts) (i) Pure with Applications ref A5 (ii) Calculus and Particle Dynamics ref A5 (iii) Applied Statistics ref A5  
PHYSICS ref A9  
SOCIOLOGY ref A9

**Chief Moderators**  
(Coursework)  
COMPUTING ref A5  
ENGLISH ref A3  
ENGLISH LITERATURE ref A5  
GENERAL STUDIES ref A5  
HISTORY (4 posts) (i) English and European History 1450 - c.1780 ref A13 (ii) British and European History c.1780 - 1980 ref A13 (iii) Aspects of World History since 1945 ref A13 (iv) British Economic and Social History c.1750 - 1875 ref A13

Application forms and further details may be obtained from The Secretary General (quoting the Departmental Reference Number as required for each post, as indicated above, e.g. A9). The Associated Examining Board, St. Hill House, Guildford, Surrey GU1 2EX. Completed forms should be returned not later than 3rd April, 1987.

# GCSE CHIEF EXAMINERS / MODERATORS REVISERS

The Northern Examining Association invites applications for the senior appointments listed below.

Applicants should normally be under 60, with five recent years' teaching experience and at least three years' experience as senior moderator, examiner or reviser (or similar appointment), as appropriate.

**ARITHMETIC**  
Reviser (one appointment)  
**CRAFT AND DESIGN: ENGINEERING**  
Reviser (one appointment)  
**CDT: TECHNOLOGY SYLLABUS B**  
Reviser (one appointment)  
**DANCE**  
Reviser (one appointment)  
**FRENCH**  
Reviser (one appointment)  
**GENERAL STUDIES**  
Chief Examiners (two appointments)  
Chief Moderator (one appointment)  
Reviser (one appointment)  
**GEOGRAPHY MODE 2**  
Chief Examiner (one appointment)  
**GREEK**  
Chief Examiner (one appointment)  
**HOME ECONOMICS: CHILD CARE AND DEVELOPMENT**  
Chief Moderator (five appointments)  
**INTEGRATED HUMANITIES**  
Chief Moderator (one appointment)  
**MODERN HEBREW**  
Reviser (one appointment)  
**SCIENCE (MODULAR)**  
Reviser (one appointment)  
**UKRAINIAN**  
Chief Examiner (one appointment)

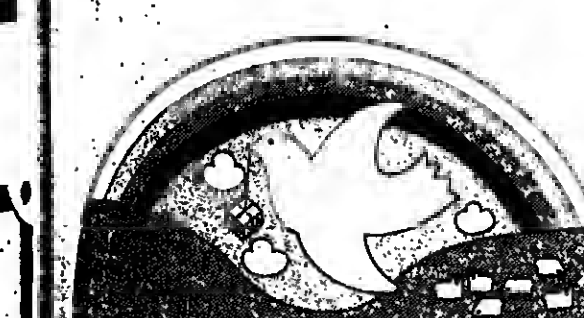
Further details (including closing date for applications) and application forms may be obtained from:  
**NEA Examiner Appointments**  
Joint Matriculation Board  
Manchester M15 6EU  
Previous applicants for re-advertised posts need not re-apply

**LONDON AND EAST ANGLIAN GROUP FOR GCSE EXAMINATIONS**  
**EAST ANGLIAN EXAMINATIONS BOARD**  
**LONDON REGIONAL EXAMINING BOARD**  
**EXAMINATIONS BOARD**  
**General Certificate of Secondary Education Examination**  
Applications are invited for the following appointments for the June 1988 examination. Applicants should be graduates or hold other appropriate qualifications and should be under 65 with, normally, five years' recent teaching experience for Chief Examiner and three years' recent teaching experience for Chief Examiner appointments. It is also essential for Chief Examiner appointments that applicants have 3 years' experience as a Librarian and a preference must be given to graduates with a working knowledge of French. For further information please telephone Ms. W. W. Shaw at the London office on 01-853 1073 (ext. 1073) or write to: 1073 Queens Road, London SW11 1JL. (14938)

**Chief Examiner**  
**MODERN GREEK (Re-advertisement)**  
**FOOD AND COMMUNITY**  
**Coursework Assessors**  
**HISTORY, SYLLABUS A, B and C**  
Details from: The Secretary, University of London School Examinations Board, Stewart House (Room 215), 32 Russell Square, London WC1B 5DN. Applicants should enclose a self-addressed foolscap envelope. (14938)

**UNIVERSITY OF LONDON SCHOOL EXAMINATIONS BOARD**  
**GENERAL CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**  
(The University of London School Examinations Board is part of the London and East Anglian Group for the GCSE Examination).  
The Board invites applications for the following Moderator appointments. The successful applicant will be one of a team of Moderators appointed for each subject. Applicants should be graduates or hold appropriate qualifications and should be under 65 with five years' recent teaching experience. Examining experience is essential.

**MODERATORS**  
for immediate appointment  
**ECONOMICS**  
**UNDERSTANDING INDUSTRIAL SOCIETY**  
For application forms and further details write to: The Secretary, University of London School Examinations Board, Stewart House (Room 215), 32 Russell Square, London WC1B 5DN. Applicants should enclose a self-addressed foolscap envelope. Completed application forms should be returned by 7 April 1987. (14938)



**INSTRUCTION SHEET WRITER/ SEWING ADVISER**  
Clothkits is a progressive company which designs and sells coordinating children's/adult's fashion. In either sewing kit or ready-made form.  
An exciting opportunity, created by maternity leave (approx. 9 months) now exists for an experienced NEEDLEWORK TEACHER, with proven administrative skills, to join our energetic design department.  
You have the innovation required to write (and type) clear sewing instructions, draw simple diagrams of garments, construction and offer advice on sewing queries. We would be delighted to hear from you. Experience/keen interest of micro-computers, a definite advantage.  
Please write telling me about yourself, expected salary and enclosing a CV, to:  
Sally Pickles, Clothkits, 24 High Street, Lewes, East Sussex BN7 2LS

**Librarians**  
**LONDON ECS DOCUMENTATION SERVICES OFFICER**  
Age 25-35 Salary £10,000 p.a.  
A Recruitment Company based in London ECS wishes to establish a computerized data bank of technical information to be used by underwriters in rating risks. Applicants must have 3 years' experience as a Librarian and a preference must be given to graduates with a working knowledge of French. For further information please telephone Ms. W. W. Shaw at the London office on 01-853 1073 (ext. 1073) or write to: 1073 Queens Road, London SW11 1JL. (14938)

**Miscellaneous**  
**ALTERNATIVE FOR TEACHERS**  
Use professional skills in new employment. Private tuition. From Teaching into Business. Courses in Writing and Publishing. £2.25 each. All three £5.95. Dept. 3, Hamilton House Publishing, Riverside, Northampton. Telephone 0604 881888. (44366)

**FOUNDATION FOR CONDUCTIVE EDUCATION**  
**The Birmingham Institute**  
In collaboration with the Petó Institute in Budapest, the Foundation for Conductive Education is establishing a Project to train conductors, run conductive groups for motor-disordered children and adults and carry out basic research.  
The Project is established in conjunction with the City of Birmingham, Dr Barnardo's, the Parkinson's Disease Society, the University of Birmingham and others and will run for four years. Staff will be based in Birmingham but will also spend periods in Budapest.  
**PROJECT DIRECTOR**  
The Director will be responsible for the overall management of the Project, for the education of children attending and for co-ordinating training and conduction with the Project's researchers, the Petó Institute, outside agencies and the Foundation. Candidates should have a higher degree in education and a successful record in school management and research. The Director will not train as a conductor. Salary in the Burnham Head-teachers' Scale 7 (subject to review).  
**STUDENT CONDUCTORS**  
(9 Posts)  
Student conductors should be good honours graduates and qualified teachers who have passed their probationary year. They will need to be physically fit, energetic and prepared to study and work hard for four years. To meet Hungarian requirements they should have some musical ability and be aged 25 years or below.  
Academic and practical training will be provided in Budapest and in Birmingham throughout the four years of this project and students will run groups for young children and for adults. A diploma will be awarded by the Petó Institute on successful completion of the course. Salary according to Burnham Scale 1 or 2 (subject to review).  
The Project will commence on 1st September 1987. Teachers supernumerary will be payable and the possibility of secondment for current employers will be passed as required. No previous experience in special education is expected; teachers with a background in nursery and primary education are especially encouraged.  
Further particulars and application form from the Foundation for Conductive Education, The University, Birmingham B15 2TT. Telephone No. 021 472 1301.  
Closing date for application: Friday 27th March 1987. (42003)

**TEACHERS**  
Would you like to earn  
**£22,320!**  
- CROYDON AREA -  
You've got to be enthusiastic, age 25-35, intelligent and ambitious. Your integrity, determination and responsibility will be evident from your career so far.  
You've got to be keen to meet people and help them in organising their finances and planning for the future.  
Many co-teachers have joined us here at Croydon Branch, last year our Branch field force averaged £22,320.  
We can offer you a full-time, gratifying career appointment in a highly respected area organisation. We can offer you a progressive and secure future in one of the world's major financial institutions with the opportunity to progress to the highest management level.  
We can offer you graded training, supervision and support for the first three years while you are becoming fully established.  
We can offer you an extensive range of plans to ensure the widest possible investment in every aspect of life: insurance, pensions, mortgage, equity-linked investment and financial planning.  
If you would like more information, contact Laurence Nash, Recruitment Manager, Sun Life Ass. Co. of Canada, Croydon House, 6470 High Street, Croydon CR9 1BN or telephone 01-886 2735 Ext. 157. (14940)

**SunLife of Canada**

**DO YOU HAVE THE EXPERIENCE AND QUALITIES TO BECOME AN AREA MANAGER FOR HEINEMANN?**  
In view of HEB's considerable success with Scottish Primary Maths and in order to further develop our sales efforts into the Primary School market, we are reorganising and expanding our Primary Sales Team. We are now seeking an Area Manager to look after our Southern regional area, supervising and supporting the work of a team of five/six freelance Representatives.  
The Southern Area Manager's role involves recruiting, training and motivating Representatives, presenting seminars and helping at exhibitions.  
Applicants for this exciting new position should have had some teaching experience and preferably some experience of selling into the educational market. Enthusiasm, energy and the ability to motivate others are all qualities necessary to fulfill this role effectively.  
The successful candidate will live in Central Southern England, (ideally Basingstoke/Reading/Newbury area) and is likely to be aged between 23-30.  
A competitive salary, company car and expenses are offered, together with the opportunity to share in the future of Britain's most respected and successful school publisher.  
Applicants should write with full CV to:  
Alan Watson  
2 Lowshops Lane  
Rothwell  
LEEDS LS26 0RH  
**Heinemann Educational Books Ltd**

**ENGINEERING AND TOWN PLANNING DEPARTMENT**  
**ROAD SAFETY OFFICER**  
Ref. EP.093  
£8,931-£10,164 p.a.  
plus casual user and car loan facilities  
To join a team providing Road Safety education and training in schools and organising the National Cycling Proficiency Scheme. Duties would also include deputising for the District Road Safety Officer in administering and supervising the Team.  
3 years' experience, plus a teaching qualification and current car driving licence is essential.  
Informal discussion will be welcomed by Reg Mahon on Walsall (0822) 21244 ext. 2508.  
Last date for receipt of completed applications: 27th March 1987.  
Application forms and details from: Personnel Dept., P.M.S.U., Civic Centre, Derwall Street, Walsall WS1 1TP, quoting job title and reference number.  
Tel: Walsall 21244 ext. 3202.  
**Walsall**  
An Equal Opportunity Employer  
Metropolitan Borough

**SOUTHWARK DIOCESAN BOARD OF EDUCATION**  
**WARDEN**  
HOLY TRINITY URBAN CENTRE  
Lambeth  
A suitably qualified person is required for the post of Warden of a Day and Residential Centre in Central London. The Warden would be a member of a large Diocesan Education Team.  
Salary: Burnham Scale 3 (£8,910-£12,627 plus £1,110 London Allowance) according to qualifications and experience. The Warden would be required to live on site in a new 3 bedroomed bungalow at negotiated rental.  
Further details and application form from: The Director of Education, S.D.B.E. 48 Unloo Street, London SE1 1TD. Tel: (01) 407 7911.  
Closing date for applications: March 31st 1987.  
**THE BOARD OF EDUCATION IS AN EQUAL OPPORTUNITIES EMPLOYER** (12610)

**TEACHERS**  
Would you like to earn  
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